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Medicine in the Crisis*

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You who cross the threshold today are ready to assume the tasks which society has a right to expect of those whom it has selected and prepared for public service and scientific leadership. The present national emergency again offers proof that with privilege and opportunity go responsibility to serve the cause of human freedom and democracy. In the face of the world turmoil, you may well pause and ponder the confusion before you. These are days for clear thinking and cool courage.

We are in the midst of one of those major cycles which have occurred at long intervals in the evolution of mankind. The past has seen similar periods when civilization and liberty have been threatened. The souls of men and of nations have been tested severely in such experiences but the lessons of the past teach us that right will ultimately prevail. The struggle to make the world a safer and better place will succeed when men and women with convictions, self-sacrifice and determination are aroused to meet the challenge.

In this trying moment in our history it is peculiarly fitting, indeed, refreshing, that we gather under the auspices of a great educational institution to dedicate anew our confidence in those aspirations of higher learning and national duty to which the universities, medical schools and hospitals are devoted. It is vital to the future of the country and of the world that our confidence in standards of education and professional competence remain unshaken. Please keep in mind that through all the upheavals of history underlying progress in medical science and practice have gone forward in spite of temporary set-backs. Our problems today are different not so much in kind as in complexity from those faced in the ancient days of the Pharaohs, during the rule of Hammurabi in Babylonia, in the time of Hippocrates, through the Dark Ages and the tragic period of the Black Death. In view of the demolition or diversion of scientific and educational institutions almost everywhere, mere preservation of the advances in the fields of science and medicine has become a major concern. We in the

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western world, not unlike Greece and Rome before us, are in a real sense of the word the trustees of the accumulated knowledge, skills and productive efforts of past centuries. We will not fail the future.

Even though the science and art of medicine are ageless and will endure as long as the human race inhabits the earth, we cannot be content merely to preserve our heritage of the past. The offensive is as necessary in science and in public action as it is in military strategy. We must examine thoughtfully the special contribution we are expected to make to the safety and security of the country. Our individual responsibilities are not only for the period of the war emergency but equally for the reconstruction after the present crisis has passed—as it certainly will. Whether it be for the emergency or for a life career, emphasis must be kept on adequate preparation for the tasks which we may be called on to perform. The greatest problem confronting the country in its hour of trial is the lack of properly trained personnel, not only in the more urgent fields of military action and war industry, but quite as much in the public services, medical care, nursing, hospitals and other important health features of a modern society.

First things must come first. Our immediate task is to win this war, which we will, even though the struggle be long and arduous. How are the medical profession and medical education contributing to the all out effort?

The expanding Army and Navy urgently need young physicians of skill and ability. And they want them in large numbers. The military forces will require 20,000 more medical officers than are now on duty to complete the program for 1942. An army of 6,000,000 men, which was intimated recently, will require 39,000 physicians. The Navy may shortly need about 10,000 more physicians. The total for the two services will reach about 49,000 exclusive of the medical personnel for the new war industries. About 42,000 physicians in the United States are under 36 years of age and 81,000 under 45. The combatant forces, when fully developed under existing announced plans, will require a large proportion of physicians under 45 years of age who are not absolutely essential in their present activities and are eligible for a commission to enter military service. In World War I, 31,000 doctors were in service in 1918.

What is not generally known is that the armed forces are assigned between four and five times as many doctors as are provided for our civilian population which, incidentally, has the highest ratio of physicians of any country in the world. While the ratio of 6.5 medical officers per 1,000 men is high for the periods of inactivity of healthy young men (in the British Army the figure is 4.2 per 1,000), the combat services and the morale of troops and seamen would be jeopardized seriously under battle conditions should the medical services be found inadequate when most needed.

The need for many more medical officers promptly in case of war was recognized by the medical schools and universities more than a year before the Pearl

Harbor incident. Last year nearly all medical schools increased their enrolment and during the summer a number also began the acceleration of medical training for some of their students. Within ten days of the declaration of war, the plan of acceleration previously worked out was announced for virtually every medical school in the country. This is not an easy program to put into operation because it calls for sacrifices by institutions, staffs and students. There have been a few complaints from those who are disturbed because the plan and even the war have caused personal inconvenience. Others fear that the staff and students may suffer fatigue. Both criticisms are well founded, but the inconveniences and fatigue appear trifling when compared with those of our men and women at Bataan or Corregidor and the herculean efforts of our allies at Java, Burma, Malta, Dunkirk and Kharkov.

The accelerated program will produce about 5,000 more graduates than normally during the next three years when they will be needed urgently. The Selective Service System has recognized the essential functions of medical officers and the importance of insuring a continuous supply of doctors by urging on local boards that "no student or intern who gives reasonable promise of becoming an acceptable medical doctor be called to military service before attaining that status." Both the Army and Navy further insure the supply of medical officers by offering medical students commissions and by permitting them to complete their medical education. The problem of financing partially self-supporting students during the condensed program is now on the way toward solution through student loans from the government and scholarship aid.

The instruction of students is being focused on war needs without changing the basic long term standards of teaching. In the past the curriculum was adjusted primarily to the medical problems of our own population. But the dispersal of military forces all over the globe has suddenly thrown on professional education many new responsibilities. Our doctors with troops and ships everywhere must be prepared to recognize and treat under field or sea conditions such tropical diseases as yellow fever, malaria, dengue fever and the dysenteries, as well as frost bite and the conditions due to exposure in the far north. They must be competent to deal with severe burns and surgical shock, to control communicable diseases, to handle the profound physiological changes incident to altitude flying, dive bombing, and submarine compression, to combat the injuries from poison gases, to treat a wide variety of mental and emotional disturbances under war conditions, to use properly and effectively the newer therapeutic chemical agents and to advise regarding the nutrition and sanitation for troops, evacuees and civilians. To teach these subjects in an already crowded curriculum under an accelerated program will tax the ingenuity and capacity of staffs and students alike. But we will do it!

Modern all out war is fully as much an industrial as it is a military under-

taking. The numbers and mobilization of persons necessary to provide armaments, supplies, transportation and auxiliary services present problems as great as preparing the combat forces. The health and medical care of these workers, their families and the communities in which they are employed, often recently created or greatly expanded, require special instruction of students and physicians in public health, sanitation, nutrition and industrial hygiene.

Although the immediate military demands must have first consideration, we are not unmindful of the period of world and national reconstruction after the military struggle is closed. That era may well be fully as challenging as the war itself, which, in fact, may be only a violent expression of the world wide social and economic revolution, the earlier stages of which have been well recognized for years. Our aim is also to prepare physicians for further evolution of medical care and education which has already shown its pattern.

The problems of medical care have been shifting noticeably in recent years. A generation ago, for example, greatest attention of necessity was devoted to the crippling and killing disorders of infancy and the infectious diseases of youth. Success in the control of diphtheria, typhoid fever, smallpox, the gastrointestinal disorders of infancy, and tuberculosis, as illustrations, has greatly modified medical care and education. Partly because of these accomplishments, as well as the lowered birth rate and reduced immigration, more people live to adulthood and old age. The proportion of the population over 50 years of age has about doubled since the Civil War and will be almost trebled by 1975. The effect of this fundamental change in the composition of our communities is of significance not only in the field of medical care and the health of individuals but is of great importance in relation to employment, family life, recreation and politics.

The shift in the age distribution has been reflected in medical teaching, research, nursing and hospital care. The degenerative disorders of the heart, blood vessels, kidneys and joints, together with the various forms of malignancy, account for most of the disabilities and death in persons over 50 years of age. About 60 per cent of deaths in individuals over 40 years of age are due to the causes just enumerated.

The spectacular results from the sulfa drugs have added a whole new and gratifyingly successful field of treatment for many obstinate and frequently fatal infections. The newer developments in nutrition, radiation therapy, endocrinology, the virus diseases, immunology and surgery have had a profound influence on medical instruction and research. These and many other contributions will play important roles in the medicine of tomorrow for which we must prepare today.

These comments on the reconstruction period would be quite incomplete if limited merely to scientific considerations. Fundamental changes in the methods of providing medical, hospital, nursing, dental and home care have been in

process in recent years. The economic and professional dislocations of the war period may give added impetus to the trends already discernible. There has been a great deal of discussion recently, much of it rather loose and uninformed, on the questions of the economics of medical care. Search for a single formula for this complex problem is not likely to be successful. The situation can easily be oversimplified by enthusiastic advocates of some special solution.

Suffice it to say here that increased attention has been given in the last few years to broad programs of social security as exemplified in the fields of unemployment, health, old age and disability. There is an awakening sense of responsibility on the part of communities, the professions and educational institutions that reasonably adequate medical, dental, hospital and nursing care should, as a matter of public policy and national health, be provided for every group of the population, ecenomic as well as geographic.

While it is not necessary at this time to predict the form which medical care of the future will assume, it is important that medical students and physicians be prepared in the public interest to initiate and guide the responsibilities of the professions under the changing social and economic conditions. It is well to emphasize that any sound plan of organizing and financing medical care for a community, whether developed from within the profession or imposed on it from without, should place the crucial responsibilities on the trained and competent physician.

No statement expresses the broad social responsibilities and aspirations of medicine better than that of A. Lawrence Lowell, recently president of Harvard University, when in summarizing the progress of civilization he said, "It is hardly an exaggeration to summarize the history of four hundred years by saying that the leading idea of a conquering nation in relation to the conquered was in 1600 to change their religion; in 1700 to change their laws; in 1800 to change their trade; and in 1900 to change their drainage. May we not say that on the prow of the conquering ship in these four hundred years, first stood the priest, then the lawyer, then the merchant, and finally the physician."

Proposed Plan for Teaching in Medical Schools

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All will concede that toward the end of educating students to become physicians, physicians who are capable of finding the cause and cure of disease, physicians who are able to heal patients (too often our preoccupation with the disease process as such obscures our awareness that the patient as a total organism is the ultimate value)—it is necessary to inculcate a vast body of detailed information. The inadequacy and wastefulness of our present system of imparting such knowledge is attested to by the consistent complaints not only of mediocre but of superior students, and by the almost universal testimony of practicing physicians to the effect both that they soon "forget" the greater part of the detailed information they "crammed" to pass their courses and state board examinations, and, more important, that they felt woefully unprepared when they began their practice. The difficulty lies not in the material taught and not primarily in either the ability or the attitude of the students, but in our method of presentation. Under our present scheme, students—particularly during their first two years—must devote a large part of their time to the rote memorization of multitudinous facts; facts which are so departmentalized and categorized that their functional interrelations are obscured and their ultimate significance, so far as the patient is concerned, is not appreciated. Such a procedure fails, to a large degree, to utilize the powerful learning aids of the total concept technique and the laws of association; it substitutes mechanical and verbal memorization for meaningful repetition; and it fails to capitalize on both the student's initial interest in medicine and on the inherently interesting nature of the material presented.

TOTAL CONCEPT.—If the student is not to be confused or lost in a welter of details, it is important that he have a total concept, a plan, an orientation, a map. Such a survey or preview will provide him with a guide for the direction of his learning, will furnish a perspective in accordance with which he can discriminate between important and unimportant details, and will enable him to see the details which must be learned not as isolated and unrelated facts, but as significant parts of a meaningful whole.

At present, the student studies sequentially—first, anatomy; next, chemistry; then physiology; etc. He has no clear idea either of the general significance of the particular study or of its functional importance; and, as a consequence, he cannot evaluate details properly. Moreover, he has little comprehension of the relation of his specific studies to the main arteries of medical knowledge, and so has no

"thread on which to string his beads," no "peg on which to hang" his facts. Our present system of teaching medicine is comparable to giving a person a section of a scaleless map wherein all roads from main highways to forest paths are marked alike and then expecting him, without the aid of a compass, not only to be able to fit one section to another, but also to follow his map and arrive at a given destination. It is not an "impossible" task; but it involves a senseless waste of time and effort. Our students, in learning the "basic sciences," do much this same kind of thing, exploring one avenue after another, often mistaking a detour or dead end road for the main highway, traveling repetitiously but circuitously so that little progress is accomplished, and rarely having their destination clearly in mind; i.e., rarely seeing the relation of the laboriously learned details to the patient whom they eventually intend to treat.

To provide the student with such a "total concept," a survey course, lasting one quarter, should be given at the beginning of the medical course. This course would offer a presentation and study of the anatomy of the principal organ systems (the main highways), without attempting to give details. Such a survey course would provide an orientation, a perspective of the various parts and functions, a general outline, so that the details to be learned later can be understood clearly in terms of their actual, proportional and related significance.

Learning by the Process of Association.—The ability of the human organism (indeed of all organisms, and particularly those with a cerebral cortex) to learn by association is at the basis of the science of conditioned reflexes and is responsible for the acquisition of much of our knowledge today. It is generally agreed that our "minds" are better able to grasp information which is learned by the associative techniques; and yet much, if not most, of the information learned by the medical student is acquired by rote memory. Rote memory is a mechanical, routine performance, necessitating neither comprehension nor appreciation of that which the "memorizer" is temporarily, at least, able to repeat. Depending largely on the acuity and training of visual and auditory imagery, this mechanical memorization is relatively easy for some and laboriously difficult for others. Even were students able to remember indefinitely the material which they have memorized in this parrot-like fashion (after the manner in which the Ebinghaus nonsense syllables may be learned), such information would be of little value, since the application of knowledge is the test of its real value. What actually happens is that the majority of students rapidly forget their "memory work" as soon as they have transferred it to their examination papers and are busily engaged in memorizing the facts for the next course. For example, in anatomy, the student begins with a dissection of the muscles. He memorizes the names of the muscles, their origins, insertions, innervation and blood supply. In a similar fashion, various systems of the body are studied with emphasis on names of bony points, of branches of nerves and arteries, and the detailed histologic factors of

one structure after another. The relationships and the significance of these structures are either not discussed or so superficially that when confronted with the necessity of recalling such detailed information, the student must revert to rote memorization. The more of these (to him) more-or-less meaningless details the student can commit to memory, the better will be his grade in anatomy.

The subjects of histology, neuroanatomy, chemistry, bacteriology, pharmacology and, to a lesser extent, physiology, are subject, in varying degrees, to the same teaching and learning defects and errors. Facts are memorized routinely; their significance is little understood in terms of the patients whom the student wishes some day to treat; and because these facts which would eventually be of value to the student are learned as self-contained entities, they are soon forgotten.

If, in the introductory survey course, the student has had the opportunity to get a broad general outline of the structure of the body, then he will have the groundwork for doing his associative learning. All further teaching is to be in terms of organ systems, so that the facts which will be presented and memorized will be taught and learned in direct sequence to and with emphasis on relationship to other pertinent facts. In this manner, anatomy, chemistry, physiology, pathology, etc., will be studied simultaneously, and will not be departmentalized as separate courses to be disposed of one by one so that the students may move on to another course; they will be taught throughout the entire medical curriculum: *always taught with emphasis on their relevancy to the function of the organ system in the living patient.* Thus, when the student has studied the gross and microscopic anatomy of the heart, he will be able immediately to associate in his own mind the facts which he is simultaneously learning with reference to the physiology of the heart and the various pathologic complications of the heart. All of these facts will have significance and will be more easily learned and more tenaciously remembered because he will have seen many cardiac patients presenting clinical symptoms. In the same way, the student will learn better, remember better, and understand better the various neuroanatomical structures in the spinal cord, if he is studying the physiology, the pathology, and the clinical syndromes of the spinal cord simultaneously with the anatomy of that organ system. Each of the facts in the whole picture will be infinitely more meaningful and learned more adequately, because its ultimate significance will be apprehended and because it will be "tied up with" related facts. In brief, one may say that facts which are related to each other should be studied in relation to each other; *structure should always be studied in relation to function.*

Meaningful Repetition.—If material once learned is to be retained permanently, repetition is usually necessary. If, at the time of first learning, interest is very great, there may be little need for repetition; but if the interest is routine—and no interest can be maintained at "white heat" for every detail of medicine—then the more the fact is repeated, the better will it be learned.

But meaningful repetition is vastly different from repeated rote memorization. Having, under this proposed new scheme of studying medicine, acquired a total concept, the student is able not only to learn each new detail in relation to the related parts and functions, but each such new experience serves to refresh his knowledge of the general plan. Every discussion of any part should include a brief review of the related parts previously studied.

Moreover, repeated material is better learned when it is differentiated from its larger entity, when specific details are "fitted into" broad outlines, when variations are studied after the usual or common are understood. The function and structure of the gallbladder are understood better if one first learns about the liver; the site and significance of the ampulla of Vater are better appreciated if one has previously understood the significance of the gallbladder. The extrapyramidal system is understood better if one first understands the function of the pyramidal system; the red nucleus is better appreciated if one first knows the general function of the extrapyramidal tracts. Consequently, the planned repetition of material for the student should follow the course of avoiding, on the one hand, details, until the general outline has been mastered, and, on the other, of the constant reiteration of each division and of each subdivision in the studying of a new detail.

INTEREST.—Vital interest in any work makes not only for greater and more sustained effort but for greater ease in accomplishment. This general truth is no less true for the study of medicine than for any other field of endeavor. So small as to be negligible is the number of students who are not, initially at least, interested in medicine when they enter on their course of study. And yet, one hears constantly, particularly during the first two years, complaints that the courses are "dull," "uninteresting," "mere memory work," "boresome." What happens to blunt the keen edge of interest?

At the University of Illinois Medical School, for entrance to which a student must have proved himself to be a better-than-average student as evidenced by the required 3.5 grade in premedical work, an attempt was made to determine why certain students fail. The question of intellectual ability arose and was measured, to the degree that intelligence can be measured, by the revised Army Alpha Test. The correlation between the score on this test and premedic grades was .35, a correlation which is statistically significant but indicative that the intellectual role, while important, is not the only or the most important factor in grade determination. When the test scores were correlated with the grades made in anatomy and physiological chemistry (the two subjects taught during the first semester of medical school), it was found that r equalled .13 and .02, respectively. This lack of statistical significance indicates that there is little relationship between the relative intelligence as indicated by the Alpha score and the relative

scholastic grade in the first semester of medical school. The Army Alpha scores ranged between 114 and 197; the class average was 152. Tests in the subsequent five years revealed almost identical results.

Twenty students, whose first semester grades were below 75, were interviewed. The close parallel between this group and the total group is striking. The Army Alpha score varies between 114 and 179, the average being 154 as compared with the class average of 152. The intellectual average, as measured by this test, of the "flunking" group was the same as that of the passing group. In the personal interviews these failing students told of few external distractions. Financial problems were present, but apparently were no more acute than those of many other members of the student body. Two students worked outside school hours; a few had minor personal problems; many had poor study habits and poor study situations. However, in the majority of cases, neither the interviewer nor the student ascribed failure to the urgency of external stress.

Practically every student, however, described the subjects as being dull and uninteresting and complained that there were too many details to learn, details which had no meaning or significance and which required nothing but parrot memory. Most of the students insisted that they were eager to study diligently and were not "afraid of hard work;" but they were discouraged and irritated by the fact that the subjects, as presented, had little relation to their concept of what the study of medicine should be like and seemed more like a high school course in Latin; i.e., a course in which one studied what one was told to study, not because of interest but merely because it was decreed. They, according to their own testimony, "wished to study medicine" and not "to memorize lists of unrelated facts and names."

The difficulty with this group of students was not any special defect in intellectual ability or any lack of desire to become good physicians or of willingness to do the hard work necessary for the achievement of that goal; it was simply that the entire situation as they encountered it lacked interest, meaning or significance. It might be possible to ignore these criticisms of our present methods of teaching medicine were they made only by the inferior or mediocre student. General discussion with other students—those who did satisfactory or even superior work—revealed that the same feeling of dissatisfaction was present. That their interest was sufficiently keen or their self-discipline sufficiently unyielding to enable them to force themselves to do what was required did not keep them from feeling that much of what they did "was an awful waste of time."

The student's interest does not need artificial stimulation. If the material at hand is presented in such a fashion as continuously to demonstrate the ultimate significance of what is being studied, the interest will not flag. The student is interested in medicine before he ever enters medical school; if he can see that

what he is learning is related and essential to his goal of becoming a physician, his interest will grow both in purposefulness and in intensity. If, in addition, he can see, study and treat patients in ward rounds with a physician, such practical demonstration and application of what he is learning will still further increase his zest.

Suggested Program for Medical Schools.—In order to put these principles into practical application, it is necessary (1) to give the student a general survey of the entire body, and (2) subsequently to study the larger subdivisions of the total organism. It is suggested that the first quarter of the medical school be devoted to a study of the outlines of anatomy of the total organism (see appended table); and that the remainder of the first two years, i.e., five quarters, be given over to the study of organ systems, such as the cardiovascular, the respiratory, etc. In order that interest be maintained at its highest level, and that the student "associate" related factors, patients should be presented whenever a new topic is discussed and whenever else possible. The method by which topics are studied will also facilitate associative processes (see Appendix II). Visualization should be aided by actual demonstrations of organs, by models, by motion pictures.

It is suggested that the program be adopted for the first two years, the third and fourth years to remain unchanged as of the present. I have advanced what I consider an ideal system for the teaching of all medical students. However, it would no doubt be well that an experimental group of twenty students be tried on this program in order to isolate and correct the many difficulties that are bound to arise. Only through experimentation can the exact limits of the survey course be determined; and only so can adequate techniques of associative teaching be devised. Putting such a plan into operation will call for much reorganization and for much hard work on the part of every one involved. However, here as elsewhere, progress is to be achieved by setting up goals and working despite obstacles toward the realization of those ideals. Our goal in medical school teaching is to prepare physicians as adequately as possible, and it is believed that the plan herein proposed will, if followed, do much toward the realization of that ideal.

An opportunity to try the value of the "organ system" method of teaching occurred when a medical student failed his comprehensive examinations at the end of two years, and failed the oral examination given at the end of the summer. He was told to spend one year in study, and then to repeat the examinations. He volunteered to follow the course as outlined here, i.e., he was shown patients with diseases of the heart, and then told to study the heart as to its anatomy, physiology, etc. In this way he was shown patients with disease of all the organ systems, and studied these organ systems in the textbooks and laboratory. At the end of the year the student took the National Board examinations, and out of a group of 224 candidates from all over the country, he made the sixth highest place.

APPENDIX I—GENERAL SURVEY: ANATOMY OF ENTIRE BODY

First Quarter (60 days)

Day of Quarter	
1	Presentation of patients with diseases of bones.
2- 4	Lecture and laboratory work on the skeleton.
5	Patients with diseases of the heart.
6-14	Lecture and laboratory study of the cardiovascular system.
15	Patients with diseases of the lungs.
16-21	Lecture and laboratory study of the lungs.
22	Patients with diseases of the gastro-intestinal tract.
23-36	Lecture and laboratory work on gastro-intestinal tract.
37	Patients with genito-urinary symptoms.
38-42	Lecture and laboratory work on kidney, bladder, male genitalia.
43	Patients with gynecologic symptoms.
44-48	Lecture and laboratory work on ovary, uterus, mammary glands.
49	Patients with diseases of metabolism; of endocrine glands.
50-55	Lecture and laboratory work on endocrine system.
56	Patients with diseases of the neurologic system.
57-60	Lecture and laboratory work on neuroanatomy.

APPENDIX II—STUDY OF ORGAN SYSTEMS*

Five Quarters (60 Weeks)

1. Cardiovascular system	12 weeks	7. Neurology	5 weeks
2. Respiratory system	6 weeks	8. Orthopedic surgery	1 week
3. Gastro-intestinal system	15 weeks	9. Ear, nose and throat	2 weeks
4. Genito-urinary system	5 weeks	10. Eye	1 week
5. Female reproductive system	6 weeks	11. Dermatology	1 week
6. Metabolism and endocrinology	6 weeks	12. Psychiatry	2 weeks

*This outline will probably be greatly modified with more experience.

In the study of these systems, the instructor should present patients before the study assignments are made, and then present patients at least once a week thereafter. Patients cannot be presented too often. Patients should be selected with a view primarily of disease of some anatomic part which can then be studied in the laboratory. Thus, for example, in the study of the cardiovascular system there should be a demonstration of patients suffering from myocarditis (to focus interest on the muscle structure of the heart); mitral stenosis (valves); coronary thrombosis (circulation); general arteriosclerosis (the arteriovenous system); essential hypertension (arterioles); pernicious anemia (blood cells). In order further to enhance interest as well as to create stronger associations, the clinical syndrome of each of these disease conditions should be studied in outline form.

In the classroom and laboratory study of these organ systems, there should be as many different classes each day on different aspects of the system as is practical. For example, in the study of the cardiovascular system, each of the following subjects should be studied only part of each day: anatomy should be studied in the morning for three weeks; physiology in the afternoon for six weeks; chemistry of the blood and lymph—three weeks; bacteriology, (general with emphasis on streptococci, staphlococci and Treponema pallida) for four weeks in the morning; pathology of the heart and vessels for three weeks in the afternoon; general pharmacology, plus emphasis on the cardiovascular drugs, for three weeks in the morning; psychiatry as it affects this system for two weeks.

As grouped above, there will be twelve full weeks of study, but obviously, there will be many variations in the exact amount of time which will be spent on these subjects, although the principle is to interdigitate them as much as possible.

Psychiatric Teaching and the "Prejudice for the Organic"

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It is a truism that in the intense specialization of modern research, workers in particular specialties find it increasingly difficult to appreciate not only the results but, frequently, even the motives of those working outside their particular field. Certainly if this be true of those disciplines included within the field of the so-called "natural" bodies of knowledge, like physics or biology, it is even more glaringly characteristic of those cases in which the natural sciences merge in their peripheries with the social sciences, creating a penumbra of problems associated with differing methodologies, differing instrumental techniques and fundamentally differing categories.

Psychology, constituting, whether it enjoys its position or not, one of those borderline disciplines, dipping now into physiology, inclining again toward sociology or ethnology, is, of necessity, the most exposed to criticism and attack from the biological, organic side, the side most presumptuously claiming to be the only "scientific" one as far as the study of the functions of the human organism is concerned. Without going into any lengthy discussion as to the validity of this claim, the significance of which depends on whatever arbitrary definition one may be inclined to give the term "scientific," we cannot get away from the fact that those whose training and background is chiefly in the biological sciences, where the concepts dealt with are almost palpable and tangible, react with a certain superiority to the muddle and confusion that meets their eye as they approach the social sciences either at the periphery, as psychology, or at their core, as sociology.

This type of "organic" prejudice is nowhere better reflected than in the attitudes of medical college graduates, or students getting their first contact with psychiatry. Dealing, as they do, with the concrete facts of chemistry, anatomy, physiology and their interrelationships, they develop a peculiar obtuseness and opaqueness for all those problems of the body's functioning which are not readily explainable in terms of organic concepts. They develop the conviction that medical men deal with "facts" while psychologists play around with "theories" and, after a while, this amusing dichotomy of fact and theory is crystallized into a platitude which allies medicine with the former, and psychology, and all that its differing points of view and concepts imply, with the latter. The functional relationship of fact and theory is, of course, entirely neglected, and the latter usually is understood in the sense of a vague unclear grouping of arm chair speculations about matters which are not important, in the first place, and can only be "eventually" explained biologically anyway, in the second place. There is thus built up a definitely negativistic attitude to the psychological approach, a feeling of superiority toward anybody investigating the functioning of the human organism from any but a strictly physiologic or anatomic point of view.

While it is obvious that the biologic training underlying the average medical education is the chief reason for this definite "organic" prejudice in the interpretation of any symptom picture, it is equally obvious that a variety of other factors exert a powerful complementary influence. Chief among these is the breadth, or rather lack of breadth, of the average medical man's cultural background. If he has completed the absolutely minimal requirements of chemistry, physics and biology (unless biology is given with a special emphasis on comparative development and evolution) he begins medical school work totally oblivious of what is known of the human personality, its place in the natural scheme of things, its integral relation to the immediate environmental and broader cultural forces that are shaping it, as well as its reciprocal influence on the development of the culture pattern itself. For this type of student the "mind-body" problem is resolved in one of two ways. He either becomes a mechanist and conceives of the personality as a faint echo of underlying physical processes in which "naturally" the personality simply cannot have any effect on the organism because the relation of organism-personality is unidirectional, the former determining the latter but never vice-versa; or, he creates, or deepens, a chasm between body and mind, in which the latter becomes, perhaps, an aspect of the "soul," but, in any case, functions at a higher level and through the "will" controls the "voluntary" aspects of the organism. Eschatological elements sometimes form a part of this latter picture.

The situation changes somewhat with the student who has taken courses in psychology, philosophy and sociology. Even he, however, usually becomes seduced by the siren call of the aesthetically more satifying systematization of facts in physiology, physiological chemistry and anatomy. Everything fits in so beautifully, in contrast to the vague theorizing of the social scientists, that a person feels himself on sure footing. Most disturbances in function, and pathologies, seem so well explained by specific physical causes requiring no reference to the individual as a totality that a picture of the personality as a sort of mosaic is built up. It may be slightly superior to the mechanistic picture alluded to above, inasmuch as it does admit some modifiability by environmental forces, but, in general, its trend is also to conceive of the organism-personality relation as a unidirectional one. We can see from this that the "prejudice for the organic" is difficult to overcome when a person is exposed only to special types of influence which constantly emphasize it.

A variety of other factors aid in preserving the point of view gained by the medical student. If he has had any contact with purely academic psychology, its divorce from the practical issues with which he must deal is so obvious that everything associated with a psychological approach is summarily dismissed as irrelevant. Besides, psychology for him usually means playing around with various intangible and indefinite concepts and, disaccustomed as he has become to deal with any but the most tangible and concrete entities, he stultifies or lacks the plasticity and imaginative flair necessary to treat conceptual systems as "as if" constructions hypothecated to serve merely as frameworks for experimentally or observationally derived data.

Then, too, there is the difference of motive involved. The psychologist is primarily interested in "knowing," the average medically trained man in "applying." Therapy is the latter's forte, he wishes to eliminate disturbing elements from the organism of a patient rather than to know the why or how of the total unbalancing process. "Knowing" for him is totally subservient to the practical purpose of using knowledge. In that sense, the average physician and medical student become high class craftsmen rather than scientists. Their emphasis on helping rather than understanding blinds them to types of investigation which do not seem to have any immediate fruition-point in view.

If this whole complex of factors mentioned above strengthens and confirms their suspicion that the psychological approach is not a significant one, its bonds become practically welded when they come into contact with psychiatry. The latter's woeful state of symptomania, especially in so far as that most important group of psychoses, the schizophrenic, is concerned; the presence of disagreement among individual psychiatrists; the lack of any significant physiological or anatomical criteria, all create a picture of instability and disorganization due, in their estimation, to the fact that the "underlying causal physical factors" are not known while fundamental problems are allegedly bungled and obscured by all sorts of "far fetched" psychological theories. The medical student, chiefly because of the biological emphasis in his training, is so convinced that explanation of any of the body's disorders, whether physical or psychical, can only be in anatomico-physiological terms that he regards any approach not oriented primarily from that point of view as worthless and insignificant. That is, perhaps, the most important reason for the lack of congeniality that medical men exhibit toward psychiatric problems. This, strangely enough, is even more pronounced when the field of psychoneuroses is considered and purely anatomico-physiological factors break down in favor of psychodynamic ones. An interesting psychological phenomenon takes place in the medical man with regard to this group of disorders. Their implication for a psychobiological envisagement of the total organism is either forgotten (psychoanalysts would say, repressed) because that would make the problem of the body's disorders, in general, too complicated and would disturb their rigid anatomico-physiological point of view, or a "splitting" occurs in which the psychoneuroses are unceremoniously separated from the psychoses, a "psychological" basis for the former is admitted, a "physical" basis for the latter postulated. Either of these two reactions, as we can readily see, is an escape mechanism based on an inadequate appreciation of the functioning of the human organism as a psychobiological unity. An artificial structure-function dichotomy is postulated and adhered to, and phenomena readily explainable, or at least clarifiable, from a psychobiological point of view, become mysteries which are regarded as being practically insoluble. I have met medical men who did not believe that hypnosis and all that is associated with it is possible because there seemed no way for them to explain this phenomenon. One physician went into an extended neuroanatomical justification of his assertion that pulse rate and body temperature cannot be directly or indirectly volitionally modified. The

catalepsies of the genuine Yogi and many other authentically verified phenomena associated with the fakirs, explainable in psychobiological terms, were, of course, further mysteries for him and were dismissed as "fakes."

The whole range of phenomena covered by the vague term "suggestion" are usually unknown to the medical student and in their less sensational aspects are simply referred to "imagination." Experienced physicians are, of course, but too well aware of the important role that this factor of heterosuggestion or autosuggestion plays in the health of their patients. In cases where the life of a patient is in danger due to decreased resistance, they speak of the will-to-live as of a dynamic force playing an important role in balancing the scales. There is an enormous difference, however, between what the experienced, intuitively gifted physician knows and what he learns in medical college. There is a body of knowledge which the physician acquires in degrees as he is a person of greater or lesser insight. He does not acquire this knowledge in medical school, and inasmuch as he is a practicing man, he is not particularly interested in some theoretical integration of these facts with the general body of medical knowledge. He considers them quite secondary factors, not because they are unimportant but because he cannot place his finger upon them. They are intangible and he considers that he should discuss only such subjects with which one can deal on solid ground. The implications of this experience are, therefore, lost for medical science as a whole and each new M.D. commences his professional career with the same type of "prejudice for the organic" until experience teaches him the importance of psychologic factors whereupon he simply appends the latter to the former inasmuch as that suits his practical purpose. *How* psychological factors operate and *why* they do so, does not interest him; he only knows and cares that they do.

Any *special* emphasis on psychologic factors is usually met with determined opposition. A physician often will speak superiorly of the psychologic enthusiast who allegedly claims that cancer can be cured by suggestion and syphilis by psychoanalysis. In doing so, he exhibits his "prejudice for the organic" and shows that for him psychologic and organic factors are disparate entities in spite of the fact that in practice he realizes the practical value of the former. It is odd with what strange contradiction he will admit the importance of psychogenic elements in gastric disorders or heart disturbances and yet insist that "physical" effects can only have "physical" causes.

Doubtless, this strong emotional tinge to some physicians' attitude toward psychologic factors in illnesses is responsible for the thoroughgoing "conversion experience" which they sometime undergo coming into contact with psychoanalysis. Its undoubted clinical value, but especially its beautiful systematization of human behavior, so captivates the determined oppositionist who has previously seen in psychology only vague, unclear, unsystematized generalizations, that often he not only surrenders but becomes an ardent champion of the psychologic approach by virtue of a shifting of his ambivalent emotions from an emphasis on one extreme to an emphasis on the other.

On the whole, however, the medical man who does not deal with behavior problems as such, adheres rigidly to his "prejudice for the organic" and makes of the "mental" and the "organic" disparate worlds in which the latter acts upon the former, but never vice versa. Perhaps as far as therapy itself is concerned, it does not really make very much difference whether a physician is dominated by an organic point of view or not, inasmuch as he often compensates for this one-sidedness by the use of an untutored intuition which serves him in good stead. The above situation is, however, very much to be deplored in those situations where research work in the field of abnormal behavior is concerned and where the integration of psychiatric, psychologic and social factors is necessary. Here the lack of a consistent psychobiological approach serves as a great hindrance to the solution of many problems investigated.

The fact stands then that the average medical school starts off every medical practitioner, as well as every research worker, with the same handicap, the same "constitutional bias." This he may or may not overcome. An emphasis on the psychobiologic approach, on the other hand, would give him an appreciation of the practically boundless complexity of the field and a more neutral as well as fruitful point of departure. Only when the medically trained man, whether an investigator of behavior phenomena or a medical practitioner, will realize and be trained in the fact that the constitutional and the psychologic approaches represent but different emphases on certain aspects of the fundamental psychobiologic continuum underlying all the processes of the total organism will it be possible for him to achieve superior understanding or to make really significant contributions to a proper envisagement of the biopsyche.

The Teaching of Gonorrhea Control

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Until the advent of the sulfonamide drugs, gonorrhea was a stepchild of medical practice. An atmosphere of shady repute surrounded the physician who undertook to treat this disease, and he was frequently referred to as a "clap doctor." Needless to say, such a reputation frequently excluded him from enjoying the patronage of a respectable clientele suffering from other ailments, due to fear of gossip as to the nature of their illness. For that reason, many a physician in those days refused to treat gonorrhea, considering it outside the pale of his duties to his clientele, and there was a tendency for such physicians to rather "look down the nose" at their confreres who engaged in this type of practice.

One must not censure physicians too sternly for this attitude. The treatment of gonorrhea before the days of specific chemotherapy was an ungratifying task at best. Treatment consisted mainly of local instillations and irrigations of drugs, the multiplicity of which betrayed their lack of specificity for this disease. It is doubtful if there was another disease in which an inflamed surface was subjected to as much irritation and trauma as was the case in the treatment of gonorrhea. This in spite of the fact that the pathology of this disease reveals that the gonococci multiply in glands beneath the surface mucosa, and that drugs applied to the latter fail to reach the area of multiplication where the infection is kept alive. Considering the type of treatment in common use during that period, it is little wonder that the corner drug store, with its many nostrums for this disease, enjoyed as much prestige as did the physician, a statement which is substantiated by surveys which revealed that more men when infected with gonorrhea indulged in drug store medication and self-medication than applied to a physician for the treatment of this disease.

Not only did gonorrhea represent a difficult treatment problem, for even the presence of the disease and the certainty of cure were difficult to ascertain so long as the main laboratory diagnostic aid consisted of the examination of "smears" from the infected surfaces in search of the organism. In the case of the male, symptoms were usually sufficiently clear-cut and organisms were commonly enough found by smear examination to permit of fairly ready diagnosis. In the case of the female, however, both clinical and laboratory examinations were very misleading and unreliable, except in acute cases of recent onset. After the acute stage had passed, the smear proved extremely unreliable in the diagnosis of the disease in the female, and those who placed reliance upon this type of examination gave a clean bill of health to many who were infected.

As a consequence of the above shortcomings in the diagnosis and treatment of gonorrhea, efforts by public health departments to control this disease were

desultory in nature, even after a nationwide campaign against syphilis had raised the venereal diseases out of the abyss of secrecy to permit of a direct and unhandicapped attack on these diseases. An example of this complacent attitude on the part of health authorities was the failure to apply to any extent the method of epidemiologic investigation to the control of gonorrhea, even after the effectiveness of this method in finding new infectious cases had been demonstrated for syphilis, and in spite of the fact that the shorter incubation period of gonorrhea, compared to syphilis, made it possible to determine more accurately the source of infection in the former disease. Federal appropriations were ear-marked for "syphilis control," and venereal disease programs bore the title of "syphilis control" programs, with almost studied effort to exclude gonorrhea from participation in such funds and in the programs on which they were expended. This in spite of the fact that gonorrhea was recognized to be from three to four times as common as syphilis and probably a greater cause of disability in the early stages than was syphilis. The excuse tendered for this neglect of gonorrhea by health authorities was that treatment was so unsatisfactory, infection so difficult to detect in the female, and criteria of cure so difficult to establish that it was advisable to concentrate efforts on the problems of syphilis, where such obstacles were not encountered.

The teaching of gonorrhea to medical students during the era mentioned above reflected the inadequacies of knowledge and the lack of concerted effort directed toward the control of this disease. The student was left with the impression that the treatment of gonorrhea was a "messy" proposition, producing doubtful success and probably best avoided by the general practitioner and delegated to those who specialized in this field. Physicians looking back on their medical school instruction in this field call up memories of clinic rooms with irrigation equipment raised on high, urinating troughs below, endless rows of urine bottles, countless smears to be examined to determine progress, dilators and sounds and other instruments of torture, and in the gynecological clinic the difficulties encountered in diagnosing gonorrhea until pelvic inflammatory disease supervened. Little wonder that many a physician who carried away such impressions from medical school was reluctant to include the treatment of gonorrhea as part of his stock in trade, and preferred to refer such patients elsewhere for treatment.

The introduction of the sulfonamide drugs, and particularly of sulfathiazole, has completely changed the picture described above. Using sulfathiazole, from 85 to 90 per cent cures following ten days of treatment have been reported regularly by clinics throughout the country. With such a drug available, there no longer exists the alibi of lack of a specific drug, for a cure accomplishment such as this compares favorably with that of any specific drug known to medical science. Furthermore, the drug is taken orally, dispensing with the complicated equipment and manipulations used in the era of instillations and irrigations, procedures which often discouraged the general practitioner from undertaking the treatment of this disease. Through the simplicity of its administration, specific chemotherapy has brought this disease into the sphere of activity of the general

practitioner. For the same reason it should divert from the corner drug store and into the hands of the practitioner the treatment of this disease, for no nostrum can cure gonorrhea as effectively as can sulfathiazole, and federal laws prohibit the sale of this drug over the drug store counter unless prescribed by a physician.

Coincident with the introduction of specific therapy for this disease was the improvement in diagnostic laboratory procedures. The culture of the gonococcus was raised to the level of a practical diagnostic procedure, and its effectiveness in the diagnosis of gonorrhea in the female has been far greater than that of the smear method. For example, in a series of 125 cultures taken on female jail inmates by the Department of Bacteriology of the University of Tennessee, over 20 per cent were positive by culture, whereas not a single specimen taken at the same time for smear examination was reported positive by the Health Department laboratory. Even the culture method has its limitations, but its advantages over the smear method are evident from the above figures.

The above contributions to our armamentarium have brought the control of gonorrhea within the realm of definite possibility. Promising as has been the outlook for syphilis control arising from an awakened public opinion backed by financial support for such a program, the outlook for gonorrhea control appears to be even better, due to the shorter period of treatment needed for cure and the shorter incubation period which makes possible more accurate detection of the sources of infection. It is doubtful if there is another communicable disease in which the weapons needed for control are as readily available and crying to be put to use as is the case in gonorrhea.

With these preliminary remarks regarding the general problem, attention will now be directed to the manner in which the newer knowledge regarding the control of gonorrhea can be projected into the curriculum of medical teaching in order that the student will be fully aware of the potentialities existing for the control of this disease and the role which the physician can play in the control program. An attempt has been made to achieve this at the University of Tennessee Medical School through cooperative effort by the department of genito-urinary diseases, the department of preventive medicine, and the Memphis Health Department. Instruction in the clinical aspects of gonorrhea is provided by the first of these, while the public health aspects are emphasized by the other two. The purpose of such joint effort has been to give the student a broad perspective of the problem of gonorrhea control, and to indicate especially the manner in which the clinic treatment of patients with gonorrhea fits into the community control program. The hope is that this perspective will be carried out into private practice after graduation, because the program for the control of gonorrhea will require the participation of practicing physicians if success is to be achieved.

A brief description will be given here of how the teaching of gonorrhea to medical students has been developed at the University of Tennessee with a view to accomplishing the above objective. To begin with, the community-wide gonorrhea control program in Memphis is an integral part of the health program of the Memphis Health Department. Administrative responsibility for the gon-

orrhea program is vested in the Director of the Venereal Disease Division of the Health Department. A part-time consultant serves as clinical director of the program, and determines clinic policies and procedures. This consultant was selected from the medical school staff of the genito-urinary department, and has charge of the teaching of medical students in the genito-urinary outpatient department. As a result of this dual connection, close collaboration is possible between the clinical and public health interests in the gonorrhea control program, and medical students are able to witness at first hand the results of such collaboration.

The Genito-Urinary Clinic of the teaching hospital associated with the University of Tennessee Medical School operates each day of the week except Saturday and Sunday. During their seventh quarter students attend this clinic on alternate days of the week, and a patient who is assigned to a student is requested to return on a day when the same student is in the clinic, in order that the progress of the patient may be observed by this student. Therapy is carefully supervised by members of the clinic staff who are in attendance at each clinic, and all prescriptions for sulfathiazole must be approved by one of the staff physicians. Students prepare, stain and examine all smear preparations made for purposes of diagnosis or to determine whether criteria of cure have been satisfied. A technician supervises such examinations and also aids in the preparation and examination of dark-field specimens. The procedure of culturing the gonococcus is also demonstrated to students in this clinic.

On admitting an acute case of gonorrhea to treatment, the student is required to make inquiries into the source of the patient's infection. A separate "contact record" is prepared by the student containing the names of sexual contacts during the week prior to the onset of symptoms. In the course of preventive medicine given during the same quarter, instruction is given regarding the approach to the patient in eliciting the names of contacts, and special emphasis is placed on the importance of this procedure from a control standpoint. A representative of the Memphis Health Department is present at each clinic, and aids the student in the questioning of difficult cases. On the basis of the information obtained, a home visit is made to female contacts by a public health nurse, and the contact is advised to report to a special "contact clinic" held in the same outpatient clinic once a week. A representative of the Health Department interviews all contacts referred to this clinic, and females are empirically given ten days treatment with sulfathiazole without regard to laboratory findings, which may be misleading in some cases.

With reference to the original patient, the student also participates in efforts to hold the patient under treatment until adequate treatment has been obtained. One of the important problems of gonorrhea control is the tendency of patients to discontinue treatment while still infectious, thus presenting a menace to the community by acting as a focus of spread of the disease. Aggressive action must be taken to combat this. In order that the student may study this problem at first hand, he is required to make home visits on his patients when they become delinquent in taking treatment. The purpose of the home visit is to ascertain the

cause of the delinquency and to restore the patient to treatment. Special emphasis is placed on determining the cause of the patient's delinquency, because only by doing so can steps be taken to remedy such causes where possible. Each student is required to make at least two home visits during the quarter which he spends in the clinic, and at the conclusion of the course, a class discussion is held regarding some of the problems encountered and their possible solution.

Some of the information obtained by students during the course of their home visiting might be mentioned here as evidence of the value of such efforts. For example, in a considerable number of instances, the student was unable to locate the patient at the address given, either because it was a fictitious address or because the patient had moved away. Students were cautioned to check the address each time the patient came to the clinic, and the experience of making a futile visit because of failure to do so emphasized the importance of such a procedure. Among the reasons for deliquency obtained by students from patients were the following:

Lack of symptoms.
Working hours conflicted with clinic hours.
Had left town temporarily.
Illness other than gonorrhea.
Was not told when to come back.
Came to the clinic too late to be admitted.
Had no carfare.
Transferred to a private physician.
Thought that antisyphilitic treatment cured both diseases.
Was in jail.
Had no reason.

In this brief paper, time will not be taken to discuss these causes of lapsing treatment, but each of them was fully discussed in the classroom from the standpoint of whether the fault lay in poor instruction of the patient, inadequacies of community facilities, or in conditions beyond the control of the patient or the clinic. Through such study of the causes of delinquency, an attempt was made to view the problem of treatment through the eyes of the patient, for only by so doing could the schedule of treatment be fitted into the pattern of the patient's daily existence by overcoming whatever obstacles existed.

It is hoped that the participation of the student in the activities of case finding and case holding described above will produce a realization that the mere provision of clinic service for the treatment of gonorrhea does not constitute a community control program. If any success has been achieved in expanding the student's viewpoint from the narrow conception of the treatment of the clinic case as an end in itself, to the broader perspective of feeling a sense of duty to the community which can be fulfilled only by insuring adequate treatment of patients so that infection will not be spread, and by putting into operation preventive measures by bringing under treatment the patient's source of infection, then the teaching program described above has justified the effort involved.

The Role of Medical Education in the War*

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Society has long recognized medical care as one of its basic and essential needs. To assure itself of such care, medical schools have been established and maintained at public as well as at private expense. In the United States, 67 accredited medical schools carry the responsibility for the professional education of the physicians of this great country as well as for leadership in medical research. In peace times, these are heavy responsibilities. In times of war, they are multiplied manyfold. Well trained young physicians are needed in increasing numbers for the armed forces, for other governmental services, for industry and for the civilian population; research studies on medical and physiological problems related to the war must be accelerated; special courses of instruction for prospective medical officers are needed; medical schools and their associated hospitals are expected to provide the professional staffs for large hospitals to serve with the armed forces; and the agencies of the government call on the faculties of medical schools for many types of scientific and administrative service. All of this places on the medical schools of the country a great burden and responsibility; but it also provides them with a unique opportunity to render valuable service to our country in its war efforts.

THE EDUCATION OF PHYSICIANS

The first responsibility of medical schools is to provide well trained physicians to meet the national needs. In normal times, the 5,000 physicians who graduate annually from the accredited medical schools of this country are more than sufficient to replace those physicians who discontinue practice each year. In times of war, however, the medical services of the Army and Navy demand a quota of physicians 5 to 6 times as high as that which prevails among the civilian population. To help meet this need in the current emergency, the medical schools of this country have volunteered to increase enrolments as much as their facilities will permit and to accelerate the graduation of physicians by discontinuing summer vacations for the duration of the war. This will mean that during the next three years approximately 5,000 physicians will be graduated three months earlier than normal; 5,000 more six months earlier; 5,000 nine months earlier; and 5,000 twelve months earlier. This makes the surprising total of 12,500 physician years. In other words, the medical schools of this country will be able by this acceleration of the medical curriculum to make available to the country over the next three years the equivalent of one year's medical service by 12,500 physicians.

To accomplish this, the faculties will have to carry exceptionally heavy teaching loads and time for vacations and research will have to be sacrificed. Furthermore, students will be required to forego the summer respite from their studies and

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the opportunities which vacation periods present to earn money sorely needed by many for the continuance of their education. All this presents serious problems, but they are not insurmountable. Medical faculties, even though depleted by losses of personnel to active service, are welcoming this opportunity to make a contribution to the war effort. Students are more content to stay in school to continue their studies under conditions which enable them to feel that they are preparing themselves as rapidly as possible to play their part in the national crisis. The financial problems in some instances will be acute but through the proper use of loan funds, scholarships and, possibly, governmental aid, it should be possible for even self-supporting students to carry on without too great hardship.

In order, however, that this emergency program of accelerated medical education may accomplish its objective, it is essential that medical students be continued in school and that adequate teaching staffs and facilities be maintained. Up to the present time, Selective Service boards have been granting deferment of military service to medical students in good standing and to students accepted for admission to medical schools. Our participation in the war makes the continuation of such deferment doubly essential. The officials of National Headquarters of Selective Service recognize this and have so indicated in a special memorandum on the subject. Up to the present time, the uniformity of action by Selective Service Boards in the deferment of medical students has been greater than anyone would have believed possible, but there is question whether under the increasing urgency for manpower, similar uniformity of action can be expected in the future.

To assure themselves of a continuing supply of future medical officers, both the Army and the Navy early last summer authorized the granting of commissions to junior and senior medical students with the understanding that they will not be called to active duty until they have completed at least one year of internship. This is excellent as far as it goes; but unless freshmen and sophomores are kept in school and new classes are admitted, it will be only a few years until there will not be any juniors and seniors to apply for these commissions. To forestall this possibility, the Navy Department and the War Department recently authorized the granting of commissions to freshman and sophomore medical students and to students who are "bona fide" matriculants in approved medical schools.

In addition to students, it is obvious that medical schools must have adequate faculties and facilities with which to teach these students. Procedures have been outlined by the Procurement and Assignment Service to provide for the retention on the faculties of medical schools of those physicians whose services are essential to the proper discharge of its teaching and service responsibilities. Deferment of essential faculty members who are not physicians will have to be requested from the Selective Service boards with which such individuals are registered. Memorandum I-347, dated January 12, 1942, from National Headquarters of Selective Service advises that, "It is estimated that the expanding Army will eventually require doctors and dentists in numbers heretofore unknown. They will not be available if those students who show reasonable promise of becoming

doctors and dentists are inducted prior to becoming eligible for commissions. . . . It is equally important that instructors in these fields be seriously considered for occupational deferment. Shortages of qualified instructors are known to exist. The educational institution employing the instructor should be requested to file DSS Form 42A in all cases where deferment is sought."

This advice from General Hershey, supplementing the procedures of the Procurement and Assignment Service, should make it possible to secure favorable action on those teachers whose services are clearly essential. With our country at war, we cannot hope to retain our full peace time teaching forces, limited though these may have been, but, by following the procedures outlined in this memorandum, we should be able to retain those teachers whose services are truly essential to the conduct of sound medical education during the war.

MEDICAL CURRICULUM IN WAR TIME

Inasmuch as every physically qualified medical graduate is needed by the Army or the Navy, the medical schools in war time become primarily training institutions for medical officers. The first and foremost requirement of every medical officer is that he have sound and thorough medical education. To accomplish this, no basic changes in the established medical curriculum are necessary. There are, however, certain medical problems peculiar to the war which should be added to or given special emphasis in this curriculum. For the most part, this will not require the institution of new or special courses but rather the introduction of certain new material and new emphases in existing courses. Prominent among the problems which merit such special attention are the following:

First Aid. The needs for medical services in times of war are largely of an emergency nature. In modern warfare this is true for the civilian population as well as for the armed forces. Consequently, physicians will be called on to meet many more emergencies of all kinds than in peace time practice. A course in first aid for freshman medical students will provide a background for later training in emergency surgery and will prepare undergraduate medical students to play the part which would be expected of them in case of casualties or disasters among the civilian population.

Emergency Surgery. Medical officers must be familiar with the best methods of treating the special hazards of modern war, such as various types of wounds, fractures and burns which result from high explosives, incendiary bombs, poison gas, etc. In the internship as well as in undergraduate teaching special emphasis should be placed on the emergency care of fractures and wounds.

Psychiatry. War has always precipitated latent emotional instabilities into incapacitating psychoses or psychoneurosis. The cost to our government for the care of psychiatric patients in the last war has long been past the billion dollar mark. In building an army, the emotional stability and morale of the soldiers are of vital importance. Modern warfare utilizes the instillation of fear, and the war of nerves as potent weapons. The dive bombers, screeching shells, incendiary bombs, parachute troops, sabotage, interruptions in communications are demoralizing in their effects. Under such conditions, emotionally unstable soldiers are not

only worthless but a distinct liability to any army. They never make good soldiers and as many of them as possible should be excluded at the time of the induction examination. Special skill, care, training and time are necessary to identify these potentially psychopathic individuals and to prevent their induction into the army. Many, however, are certain to get into our armed forces again. For these, the medical officer must constantly be on the alert. Under military training emotionally unstable individuals are almost certain to exhibit suggestive symptoms. Their commanding officers may note that they do not accept discipline nor develop well under training. Such symptoms should be called to the attention of medical officers, who, in turn, need special training and experience to deal effectively with these problems.

INTERNAL MEDICINE. Important among the skills of the medical officer is the ability to make discriminating physical examinations of new recruits. It is essential that disqualifying physical defects be recognized and that unimportant physical findings be evaluated properly. Tuberculosis alone among the soldiers of the last war has already cost this country approximately one billion dollars for hospital care, insurance compensation and vocational training; and these expenditures continue at the rate of three million dollars per month.[1] Some of these infections doubtless were acquired in service but unquestionably the great majority of them were present, although unrecognized, at the time that the individuals entered the services. The use of modern diagnostic techniques make it possible to recognize practically all of these infected individuals at the time of examination. Our medical officers should be trained and provided with the facilities to use these techniques. Other aspects of the physical examination for which special skills are necessary are the interpretation of heart murmurs, the estimation of cardiovascular efficiency, the neuropsychiatric examination and the examinations of the eyes and ears, particularly for aviators.

DERMATOLOGY. The medical departments of the Army and Navy report that newly appointed medical officers do not have an adequate knowledge of the common skin diseases.

VENEREAL DISEASES. Special training and experience in the prophylaxis and treatment of venereal diseases should be provided in the medical curriculum and internship.

PUBLIC HEALTH. Medical officers in our armed forces are responsible for the prevention and control of communicable diseases, the general sanitation of the camp, and the safety of foods, milk and drinking water. On competence in these fields may depend the health of large numbers of troops. Outbreaks of epidemic diseases practically always accompany the mobilization of armies. During the last war, measles, mumps, meningitis, influenza and pneumonia occurred in epidemic proportions in many camps and greatly reduced the effectiveness of large units of the army. Adequate safeguards over food and drink can easily be established in permanent or semi-permanent camps; but the modern, rapidly moving army, frequently operating in small units, must be prepared to meet these hazards

1. Cragin, D. B.: "Tuberculosis and Medical Preparedness," J. Lancet, 61:107 (April), 1941.

in an emergency manner. Medical students are regularly given instruction in these subjects, but additional emphasis needs to be placed on them in order that our graduates may be qualified for these special responsibilities.

Tropical Medicine. Since our armed forces are certain to be serving in the tropics, it is necessary that some of our medical officers be trained and experienced in the care and prevention of tropical diseases. Most of this instruction, however, will have to be given as intensive postgraduate courses because few, if any, of the medical schools in this country have in their teaching hospitals the patients with tropical diseases which are essential for clinical instruction. At the undergraduate level, special attention to courses in parasitology and some consideration of the pathological and clinical features of these diseases will serve to provide students with an introduction and somewhat of an orientation in this field.

Military Medicine. Courses in "Military Medicine" are being discussed and have already been instituted by some medical schools. Yet it is not entirely clear as to just what such courses should include or even what purpose they are intended to serve. One conception is that they should supplement the rest of the medical course with instruction concerning the special medical and surgical problems of modern warfare, such as keeping an army physically fit with proper food, exercise, rest; the prevention and care of sunstroke; of blisters, "athlete's foot," "trench mouth," venereal diseases, etc.; the medical and surgical care of wounded, burned or gassed patients; and possibly even preventive medicine, public health and tropical medicine.

One advantage in bringing these subjects together into a special course is that it would tend to emphasize the subjects and to give the students a feeling that they are receiving special instruction for war service. On the other hand, all of these subjects can appropriately be included in other courses in the medical curriculum. If this is done skillfully, it should increase the student's interest in these important courses, some of which they might otherwise feel are not of much interest in war time. In case this latter plan is followed it should be supplemented by special lectures to keep up student morale and to present subjects not otherwise adequately covered.

The other concept of a course in military medicine is that it should give the students some orientation concerning the organization, functions and methods of operation of the medical departments of the Army and the Navy, with particular reference to the duties and responsibilities of medical officers. Some instruction of this type obviously is desirable, but since one year of internship will intervene before medical graduates are called to active duty, it is doubtful whether in the undergraduate course more than a few lectures on this subject, given during the senior year, are justifiable.

Aviation Medicine. No special course in aviation medicine in the undergraduate curriculum is recommended. However, existing courses in physiology, internal medicine and ophthalmology should stress such subjects as anoxemia, physiology of high altitudes, perception of depth, ocular balances, etc.

THE TRAINING OF SPECIALISTS

In addition to physicians with a sound undergraduate medical training, both the Army and the Navy need a certain number of well-trained specialists. The surgeons, internists, radiologists and various other specialists on the staffs of military and naval hospitals need to be thoroughly competent and familiar with the application of their specialties to war casualties. Most of the facilities needed for the training of these specialists are available in the medical schools and the civilian hospitals of this country. Supplementary to these, the medical departments of the Army and the Navy are providing special training in their own hospitals, and a few civilian institutions are offering intensive highly specialized courses in limited fields for medical officers. The importance of providing opportunities for such specialized training is obvious but it is unlikely that either the Army or the Navy will be able to release many medical officers to take advantage of such training during the current emergency.

SPONSORSHIP OF AFFILIATED HOSPITALS

Another very direct service which many medical schools are rendering in this war is the provision of the professional staffs for a number of Army and Navy hospitals. The experience of the last war demonstrated the importance of having coordinated groups of competent, carefully chosen physicians to serve on the staffs of special hospitals. Almost two years ago certain medical schools and hospitals in this country were invited by the Army or the Navy to assume responsiblity for providing the medical and nursing personnel for such hospital units. In response to these invitations, staffs have been organized for 46 Army General Hospitals, 10 Evacuation Hospitals and more than 100 smaller medical units for the Navy. Some of these have been called and others are soon to be called.

The staffs of these Army General Hospitals contain 56 physicians and surgeons. Other units are somewhat smaller. No medical school in this country can lose such a proportion of its faculty without serious difficulties in carrying its teaching and service responsibilities. Those members of the faculties who remain behind must carry this undramatic but essential service as their contribution to the war. These sponsored units are splendid medical and surgical organizations which are certain to render a quality of service of which our medical schools can be justifiably proud.

MEDICAL RESEARCH

Up to the time of the first world war, the most formidable enemy of every large army was disease.[2] Napoleon's failures were due in no small degree to disease among his soldiers. His Egyptian campaign collapsed when he was unable to conquer Acre, which barred his way to India. Emil Ludvig states that in the retreat of the French army from Acre every four healthy men had to carry a comrade too ill to walk.[2] In his unsuccessful campaign in the Spanish peninsula, Napoleon's army is said to have lost 300,000 men as a result of disease, largely

2. Prinzing, Friedrich: Epidemics Resulting from Wars, Oxford, Clarendon Press, London, New York. 1916.

typhus, and less than 100,000 from casualties. During his Russian campaign, Napoleon's army was so stricken with disease that it became completely demoralized. Dysentery, in the summer of 1812, and typhus in that fateful winter raged throughout his army. It is estimated that in Vilna alone 25,000 of Napoleon's soldiers succumbed to typhus.

During the Japanese siege of Port Arthur, in 1904, typhoid fever, dynsentery and scurvy were rampant among the defenders. On the day of surrender, the Russian garrison numbered 32,400, of whom it is reported that 6,500 were in hospitals and 13,200 others were incapacitated. In our own Civil War, among the Federal Armies there were 224,586 deaths from disease as compared to only 110,070 deaths from war casualties. During the Spanish-American War, 20,926 soldiers contracted typhoid fever and 2,192 died. This is almost ten times the number killed in action. The discoveries of medical research and their application for prevention have greatly reduced the hazard of communicable diseases to the modern army. Typhoid fever, cholera, dysentery and the other gastro-intestinal diseases have practically been eliminated by sanitation and vaccination; our soldiers are now actively immunized against tetanus, which was a major problem of the World War. Wound infections have miraculously been reduced by the application of modern surgical techniques and the use of the sulfonamid drugs. Chemical prophylaxis, properly applied, is effective in the prevention of venereal diseases, and sulfonamid is apparently just as specific for the treatment of gonorrhea as arsenic and bismuth are for the treatment of syphilis. And vaccines which under experimental conditions have proven highly effective against typhus and yellow fever are now available. In fact, our troops who may be sent to certain areas are being immunized against these two diseases as well as against plague.

In spite of all this, there still remain many unsolved problems of major importance to our armed forces. Influenza is better understood than in 1919 and encouraging progress has been made in the development of a vaccine; but at the present time we are still unequipped to deal effectively with the major epidemic of this disease which is predicted for the near future. The common cold, which ranks first in all groups of our population as a cause of illness and disability, is still uncontrolled, the advertisers of vitamins, vaccines and nosedrops notwithstanding. Vaccination against pneumonia is promising but still in the experimental stage.

Research concerning the prevention and control of these and other diseases which lower national vitality, handicap production and impair the effectiveness of our armed forces is an integral and important part of our war effort. Furthermore, the physiological effects of modern mechanized warfare on the human organism must be investigated and methods minimizing these ill effects must be developed. On the ability of aviators to function effectively in the rarefied atmospheres of high altitudes and to make quickly and effectively the physiological adjustments necessitated by the speed of the modern airplane may hinge the vital supremacy of the air. The capacity of tank, gun and naval crews to withstand intense physical and mental strain, and the ill effects of the fatigue incident thereto, may well determine the outcome of important land and naval operations.

The final decision in this war will be determined not only by the number and the quality of the machines of war that we build but also by the stamina and the skill of the men who operate these machines.

In the investigation of the physiological problems related to the war, we have been just as negligent and unprepared as in other fields of this vital struggle in which we are engaged. The hour is late, but we hope not too late, for the investigation of these problems on which will depend the effective utilization of the most important unit in the modern military machine—the man behind the gun. Most of the scientists with the training and experience needed for the conduct of such studies are to be found on the faculties of our medical schools. For the past year and one-half the various committees and subcommittees of the National Research Council have been outlining the problems to be investigated, and locating and appraising the facilities and personnel available to work on these problems. There was serious delay in providing support for the investigations recommended by these committees but finally funds have been made available through the Medical Committee of the Office of Scientific Research Development for the support of these research studies. To date, liberal support has been provided for investigations in such fields as aviation physiology, shock, wound infections, infectious diseases and tropical diseases. This is another field in which our medical schools are privileged to make a significant contribution to the winning of the war.

SUMMARY

The medical schools of this country have an important role to play in our national war effort. To meet these responsibilities and obligations most schools will be faced with serious financial and personnel problems and the disruption of important work. Yet, every medical school in this land is willing, anxious and ready to do everything within its power to aid our country in its hour of crisis, and to do so without hesitation, reservation or delay.

War and Beyond the War; A Promise to Men of Medical Science*

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Throughout the past weeks and months, the atmosphere of the medical school has been heavy with thoughtful concern for the destiny of the young men who are graduating in medicine today. I have talked with many of them, men who commendably wish to plan for the future, men who seek to gain a clear vision of the relation between advancing medical science and social trends. Great happenings are in the making. They will happen more swiftly because of the tempo of war. The young men are right in seeing the necessity to get ready now, not only for immediate service, but also for the responsibilities which they must carry in the years ahead. It is to these young men, to you in this gathering who are the graduating class of the University of Cincinnati College of Medicine, that my address is dedicated.

You will have to expect that I shall dodge the direct answer to many legitimate questions. In honesty I cannot do otherwise. The data available so far do not warrant drawing conclusions concerning the details of future events. Moreover, even if I had "the gift of prophecy, and understood all mysteries, and all knowledge" it would be poor strategy at this time to tell how, why, or at what price the war will be won. If I assumed, as determined men must, that the time is coming when victory shall be an accomplished fact, then I should have to interpret accurately and persuasively the impact on society of policital and economic forces growing out of a national debt in excess of one hundred billion dollars. Surely, there are signs, which cannot be ignored, of a trend toward government control of all economic resources and of all private enterprise. But I dare not postulate that these things must be. To do so would deny belief in the inventive genius of man, a genius which has produced so recently the aeroplane, the radio and sulfanilamide. We have witnessed too often how predictions can be falsified by cataclysmic happenings in politics as well as in science and in medicine.

There will be many among you who will argue that the young physician of today need take no thought of the morrow. Army and Navy have conspired together to plan the future for him. For a time this state of affairs will hold. It can avail nothing to speculate what might or might not have been if the war had not happened. Since it is already with us, we shall do better to examine its opportunities—opportunities which in past wars have led to great forward strides in medicine. Suffering and distress are the inevitable consequences of war. It is a duty as well as an opportunity to extract from it those rewards which in terms of health and happiness can repay more adequately than in any other the debt

*Address delivered to the graduating class of the University of Cincinnati College of Medicine on the occasion of their induction into the Alumni Association, June 4, 1942.

which those who survive owe to those who suffered. The challenge here is plain. The young physician of today has much to occupy his thoughts concerning what shall be on the morrow.

What, then, are we hoping for when the new day dawns? Can we not gain some vision of the goal by taking note of the evolutionary process which for several generations has been gathering momentum throughout the world of medicine? You are graduating from a fine medical school in a country where and in a year when medicine has earned the right to be classed among the sciences. You have been instructed in anatomy, pathology and bacteriology. You have learned to recognize the morphological change wrought by disease and to identify the microorganisms which are responsible for the alterations. Knowledge in these branches of medicine is, after all, not very old. Their introduction into the American curriculum around the turn of the century marks the beginning of the evolutionary process in this country. But already they are far from being enough to satisfy the craving for understanding. You have also been instructed in physiology, in biochemistry and immunology. More and more the question "What?" is being replaced by "How?". Those subjects in the curriculum which deal with function rather than structure are rightly being stressed. Anoxemia, electrolyte balance, acid-base equilibrium, glucose tolerance, urea clearance are terms which have already taken their place in daily medical parlance. Each brings to mind disturbances of normal function and in each instance the study of function has strengthened the armaments of therapy.

It is unnecessary to stress the practical importance of such advances in knowledge. Of greater significance is the effect on current medical thinking. The advances have not come from careful observation alone. Rather they are the reward of diligently pursued and usually imaginative research. The experimental method in medicine has expanded in power and resourcefulness to the point where empirical thinking has been forced to maintain a steady retreat from many long defended bastions. We have repeatedly witnessed examples of the truth implied in the saying, "A man can make the same mistake for forty years and call it experience." Not all empirical thinking has turned out to be fallacious but it has come to be "cricket" to challenge the dogmatic empirical statement by asking for the evidence. This is the attitude of mind which is making medicine a science. This is the exciting field which you have now entered. I charge you to cherish the training you have received in the basic sciences, to guard yourselves constantly against the pitfalls of empiricism, and when puzzled, as you often will be, to let your minds rove along the broad paths of physiology in seeking an explanation.

It would be well if most of you could have graduate supervised experience in the methods of research. Such methods are fundamentally similar to those which should be used daily in the attempt to understand the symptoms or signs which your patients will present. The method begins with observation and a curiosity which signals that the cause of the symptom is obscure. Curiosity leads to a hypothesis which is then explored mentally for its logical corollaries. The hypothesis is useful if one of the corollaries can be exposed to experimental test.

The testing may require the skill and imagination of a genius but again it may not involve more than looking for a sign which previously had been neglected. Repeated many times, the process is certain to have a chastening effect. Biological problems are complicated and can rarely be followed accurately through more than one serial deduction. But the hypotheses are useful even when they turn out to be wrong. For in that case they serve to discover at what point the reasoning went astray. A new hypothesis can be formulated and its consequences exposed to further tests of observation and experiment. The method in these terms is simple. Even without supervised training you can strive to make it a habit.

"Perhaps," you may counter, "these are the steps I have been taught to take and expect to take in reaching a diagnosis with most of my patients." I warn you it is not easy to move through a busy career and maintain a lively curiosity. Too often you will encounter complacency in the statement, "We must not go beyond the facts." I say, "You must encourage your fancy to roam where it will." The danger line between fact and fancy will never be obscured when fancy is habitually encouraged to formulate tests by which its truth can be examined.

I have stated that you are entering an exciting career and implied the existence of unexplored realms where the methods of scientific medicine are sure to be crowned with rich rewards. The pace of progress has been bewilderingly rapid and war has already brought added acceleration. With solemn wonder I think of the sulfonamide drugs and with pride I view the swift steps from sulfanilamide to sulfadiazine. Humanity is reaping the harvest in terms which a child can comprehend. Does it not thrill you to see the patient with septic meningitis recover? Are you not stirred by temperature charts in cases of pneumonia? We are told from the experiences at Pearl Harbor that these drugs, by removing the menace of secondary infection, have altered profoundly the handling of the wounds and burns of battle. Elective surgery is replacing the emergency operation to the benefit of both physician and patient and the delay has lost its danger because infection can be controlled. Therapy with these drugs is still frighteningly new. There is much to learn concerning dosage and safeguards. There is a real challenge to discover their mechanism of action. But they constitute only one of the phases of medicine which can make your career exciting.

The reactions between antigen and antibody are being brought into the domain of stoichiometric chemistry. Antibody itself is said to have been produced in vitro. Virus has been crystallized. The pastime of discovering new vitamins is giving way to an understanding of the role of enzymes in cellular metabolism and to the part played by the vitamins in forming the prosthetic group in enzymes. The pneumoencephalogram is moving over to make room for the electroencephalogram. The older science, physics, as if not satisfied with its gift to medicine of radium and the x-ray, is now proffering the isotope and with it the mass spectrograph. Heavy hydrogen and heavy nitrogen are being utilized to unfold a new vision of the dynamic interchanges of living tissue. Radioactive isotopes are actually accomplishing the seemingly impossible feat of following the metabolism within the living body of some of the chemical elements. Photoelectric cell, thermionic amplifier, cathode ray oscillograph, dropping mercury electrode

—are all being called on to make their contribution toward unraveling the entangled threads of physiology and toward the relief of human suffering. Is this not, indeed, a stirring career to which you are now united?

What of the war and the opportunities brought by it to medical science? The pulse of the nation is beating faster. Everywhere is the demand for swift bold action. A premium has been set on clear imaginative thinking. Our physicians, old and young, must summon all of the creative ability that to you is now a priceless heritage. The response is already sure. You may justly be stirred that there is essential work to do and that you are to fill indispensable places in this "joy of the working."

Let us look at one of the practical opportunities which war affords to medical science. Men massed in huge numbers are trained to the strict direction of military discipline. A commanding officer in the medical corps issues an order and immediately the work begins of testing swiftly and comprehensively the usefulness of a therapeutic or prophylactic procedure. Toxoid immunization against tetanus as a substitute for horse serum antitoxin was begun in France shortly after the world war. It required the experience at Dunkirk to establish for all time the efficacy of these preventive injections. Mass experiments of this type must be designed with all the care and thoughtfulness which science can summon. Conclusions must be convincing if people everywhere are to profit by the experience. Shall we not pay tribute to the mathematician who has proffered skillful technics toward the design of experiment and the analysis of observational data? Biometry, with its theory of sampling, with its methods for randomizing irrelevant variability, with its sensitive tests for the significance of differences, has been growing in power and usefulness along with other sciences. These methods now belong to you and they can serve you well in your desire to glean the most that is worth while from the exigencies of the war.

The search for truth is always exciting. As a teacher who has personally experienced the exhilaration of investigation, I have been impelled to emphasize first this phase of your opportunity. But with it the vision of service is by no means complete. There will be untold opportunities for resourcefulness not entirely as a result of the war but certainly made greater by the war. The application of knowledge to the needs of your patient may not be easy when the facilities to which you have become accustomed are no longer to be had. Here, indeed, is a chance for resourcefulness and here the courage to try is certain to bring excitement and sometimes a soul satisfying reward.

Many years ago I went with a country doctor to visit a baby on a farm in Alabama many miles from the nearest town. The baby was literally skin and bones, too weak to cry above a whimper, too feeble to take nourishment from a bottle. But he was still alive and the dysentery which had sickened him two months earlier was no longer active. Hospital care was out of the question and I, only recently out of my intern's clothes, could not imagine what could be done without the facilities provided by a modern institution. Impressed with the futility of it all, I nevertheless stated that tube feeding for a while might bring the baby sufficient strength to allow him to take the bottle. The father, a big

man with toil roughened hands, immediately spoke up. "Doctor," said he, "when a fellow runs a farm he has to learn to do any sort of job that turns up. If you can show me how, I can give my baby the tube feedings." Catheter and syringe were obtained from the town druggist, a suitable gavage mixture was concocted in the farmhouse kitchen, and the father was shown how to pass the catheter into the infant's stomach and how to inject the feeding. I cannot report that the child is alive and healthy today for I do not know but I can tell you how I marveled to find him well along the road to recovery when I visited the farm again six weeks later.

The courage of that Alabama farmer contains a lesson for us all. Too often we hear the statement that this or that procedure, used in the hospital, is not applicable in the home. Foolish it would be indeed not to take advantage of institutional facilities when these are available and can serve the patient. But when they are not, and makeshift substitutes must be devised the reward to him who has helped the patient will be a thousand times greater. You are to be congratulated on having chosen a career which can utilize the highest flights of the human intellect not only in the quest of knowledge but also in serving your fellow men.

Is this all? No, there is still more for you to do. It has been truthfully said that medicine is not merely a science. The reasoning and experiment which I have espoused, the exercise of ingenuity and skill in treating the patient can fulfill only a part of the responsibility which you must shoulder as doctors. It is required that you cultivate a broad sympathy and develop an understanding of the ways of men. Petty jealousies will arise. Patients can be annoyingly uncooperative. These things you must learn to expect and to bear with tolerance and forgiveness. In most cases your patient means well even if, occasionally, he lacks tact. You will find there is a reward of joy when in the full sense you can reach out a helping hand to the fellow in distress.

This part of my theme holds for you in this year another soul searching question. Can you extend your tolerance to embrace those who are not immediate neighbors, even to those in foreign lands? I dare to bring the question up because —Japs, Nazis and fifth columnists, notwithstanding—we must not learn to hate. A war worth while can be waged for love of home, country or ideals; a war pursued for hate is doomed to fail even in victory. This maxim holds for all men but especially does it apply to us. Remember, we are physicians. Even in the armed forces of the country the doctor's mission is to relieve suffering, not to inflict it. We need not flinch from giving all, even life—if that is asked, for cause and country but the offering must be made without rancor. This is asking much but it is right to expect much from you who carry the name of "doctor." We can be justly proud that medicine now ranks among the sciences but we must not forget that the physician needs also to be a humanitarian. Understanding of human frailty and sympathy for human suffering must be the handmaidens of his science. Guard these attributes well! They must not be endangered by loss of faith in the fundamental goodness of at least most men.

The message which I have brought has perforce been directed by the circumstance of war. War is never nice, but when it must be, there are humane ends which it can serve. I have dwelt chiefly on war's benefactions because you, as physicians, are responsibly concerned. The closing phase of the essay puts no premium on your place as doctors. It is merely a statement of the significance of citizenship in a land which is offering to all its people the chance to unite their efforts, the chance to demonstrate to themselves what they can do when aroused, the chance to multiply for their children the gifts which have been their birthright. It was of such a people that Emerson sang,

"For what avail the plough or sail,
Or land or life, if freedom fail?"

On my last return trip to New York from Cincinnati I reached the Winton Place station about fifteen minutes before the scheduled train time. While I waited on the platform, a line of loaded freight cars appeared and began to roll by. The rails clicked with the lively pace and yet five minutes elapsed before the last car passed. As I watched with fascination, another freight train came up and again five minutes elapsed before the caboose appeared. Something of pride stirred within me as I turned to my companion and said, "There is power in a country which can load trains like that."

Move through the industrial section of any American municipality during the small hours of the night. Listen to the crashing and the grinding and the humming of machinery which in the night bespeaks twenty-four-hour-a-day operation! Anaconda Copper, Curtiss-Wright Aircraft, Otis Elevator, Hercules Powder, Continental Tractor, throughout the country! *Everywhere is power.* Let the significance of it pour into your souls and engender the faith and the courage which impel men to make their dreams come true. Fill your cup with consciousness of the power until it runs over and in spreading to those about you drowns out the pestilence of doubt! Let your courage reach out to embrace what your country shall mean to subjugated peoples in France, in Poland, in Greece, in Java, in whatever place they are! Your faith alone can bring to them the conviction of which Bryant cried, "Truth crushed to earth shall rise again." In so doing, you will gain and disseminate understanding of a great people with a great mission. For them truth kept alive will need no resurrection.

An editorial article in the *London Economist* recently stated for England, "It is a prophet that is needed, not a revolutionary; a spokesman, not a dictator. The need is to translate into a *burning faith* the inarticulate belief of a people that is as great and as creative as ever it was. The need is not for a break with the past but for a return to the native tradition of clear thinking and courage, of lucidity and daring, of bold action for modern ends." In this declaration is the essence of my closing message to you. The ideals toward which we aspire, the deeds of which we dream, the way of life we wish to gain—can all be attained through burning faith in the power, the destiny, the righteousness of free thinking peoples wherever they may be.

Anatomical Dissection: Its Place in the Curriculum

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An increasing uneasiness about the teaching of human anatomy is widely apparent, as witness a recent letter to the *British Medical Journal* from several anatomists and the address of Dr. Alan Gregg at the last meeting of the American anatomists. In some quarters there is a feeling that without changing its name or curricular hours, the department of anatomy should devote itself to medical biology in the widest sense, so as to include genetics, embryology, anthropology and some physiology as well as cytology and anatomy.

Anatomy and botany were for centuries the only "preclinical" subjects, but were taught in severely practical fashion. Botany, a truly cultural subject which has held the interest of many distinguished physicians throughout their lives, was dropped before its value as a discipline was realized. Hence, today we find a great teacher of medicine writing, "The male is an anthropological innovation; a mere incident in the history of the race," a statement which would not be accepted by anyone who had studied botany. Anatomy was never thought of as a cultural subject, valuable in weaning the young American student from didactic methods of teaching, until after physiology, biochemistry and bacteriology were part of the curriculum. These subjects, obviously, are better suited to developing manual and mental dexterity than is the topographical study of the human body.

In some medical schools, anatomy is still taught from a utilitarian point of view, but the experience is largely wasted because two or three years go by before it can be applied to use. While there are still some American born anatomists who make their own dissections, there are many who have not dissected a body since they were freshmen. Most of them do participate in supervising the student dissections, but many of us who have graduated in the past three decades never have seen a dissection being performed by an experienced anatomist with the true artistic pride in deft and well planned execution.

The group of competent, ingenious and energetic men who have made anatomy departments of American medical schools outstanding centers of research have, for the most part, been students of biology and physiology. Dissection of human bodies had little part even in suggesting their research problems. As a result, many of the greatest contributors to our knowledge of physiology take no part in teaching that subject. On the other hand, few of the younger surgeons have assisted in teaching anatomy with the student dissections. Those who have greatest need for and interest in detailed knowledge of the variations of human anatomy cannot learn by teaching; those who teach are experimental physiologists with no practical interest in the subject. This is particularly unfortunate as the number of men taking up physiology has been reduced by the fact that many who

plan to work in this field realize that advancement and time free for research are more easily secured if they enter the department of anatomy. Since those with physiological interests are also going into medicine, where they have today the same equipment for animal study as in physiology and greater opportunity for studies on man, it can truly be said that physiology is being squeezed between the upper and nether millstones.

The field of biochemistry and of physiology is growing rapidly, but the medical student is not given adequate time or the best available teaching in these basic subjects, which should form the exciting and exacting introduction to the study of medicine. It must be emphasized strongly that human dissection, no matter how well it is seasoned by sprigs of radiology, physiology or clinical demonstration, is far from being an ideal starting point for a medical student. Dissecting a human cadaver is not a very stimulating experience at the threshold of medical education, and often this unique opportunity is completely wasted on the freshman medical student as he is taught today.

Histology is of value only in connection with the functional activities of cells; gross anatomy only in connection with the functions of the body. Since the specalist in any field of physiology must be familiar with the histology and anatomy in that field, it would seem advantageous to form a single department of anatomy and physiology to include all staff members doing research and teaching in biology, histology and physiology. Here, at last, the anatomy staff would be quite at home and could teach the fields of physiology which most of them are busy exploring. The student could begin his work with biochemistry and cytology. He could start physiology as soon as he had an adequate biochemical and biophysical foundation. Histology and gross anatomical demonstration would introduce each field in physiology; further experience with human histology would automatically be given, as it is today, in pathology. The dissection of human bodies, a thoroughly utilitarian subject, would take place at the times in the curriculum where it would be most valuable, and under the supervision of men who use this field of knowledge in their daily work—the young internists, radiologists and surgeons, who today lack the opportunity to learn human anatomy by teaching it.

One could begin with the dissection of the thorax and abdomen, either just preceding or together with the courses in physical diagnosis and radiologic diagnosis, while a course in human topographical anatomy, from texts and prepared dissections, could accompany the introductory courses in surgery and obstetrics. Human neuroanatomy could be taught, by dissection of brains and from histological material, along with the introductory courses in neurological diagnosis. The instruction should be shared by neurologists, neurosurgeons and by those members of the physiology department who are interested in this field. Each student's dissection of one-half of the eviscerated body would be completed before graduation—the head and neck, perhaps, just before working in the eye, ear, nose and throat clinics; the limbs and trunk before working in the orthopedic

clinic. Dissection should reveal but not destroy the muscles and joints, and students should be able to return to this material while they are in contact with patients with diseases of the regions whose topography they have studied intensively. Meanwhile, in pathology, they should have ample opportunity for further study of the anatomy of the contents of the neck, thorax, abdomen and pelvis. The final examination in gross anatomy should be given at the end of the fourth year rather than at the end of the first.

This method would necessitate the same supply of cadavers as at present, but the dissecting room would contain whole bodies only during the week or two when the dissection of the thorax and abdomen was being performed. Then the body would be split in the midline, disarticulated at the second lumbar disc and the last cervical disc, with the neck muscles cut and tagged at their insertions into the trunk. The same dissecting table could be used by students in different classes working at different hours. The person in charge of the dissecting room and his most active assistants might be men from various departments, depending on local conditions. The director might be a member of the department of anatomy and physiology, or of surgery or radiology. In the teaching of histology and physiology, men from other departments would also participate—in one school the anatomy and physiology of the hypophysis might best be taught by a pharmacologist; that of the kidney by a member of the department of medicine or of pathology who was specializing in research in that field. The students would thus be taught basic subjects by the men most familiar with and most excited about each field. The medical school, like a military force, would gain tremendously by breaking up its hermetically sealed departments and applying "task forces" with well balanced training and interests to each field of instruction.

It is a truism that "military organization has two roots, tradition and tactical doctrine. Armies which follow sound tactical doctrine achieve victory with least cost in life; those which adopt, or slowly adapt, tradition may die." The competition between medical schools is not as lethal as that between armies, or tradition would not have played so great a part and "sound tactical doctrine" so small a part in the history of medical education. But there is every reason to believe that those schools which first adopt a curriculum in which human dissection is treated as a practical topographical exercise, in preparation for work in special fields, and in which the first year in medical school is given entirely to effective instruction in biochemistry, biophysics and physiology, will attract the best type of student and instructor, will awaken greater interest in fundamentals and graduate men with far more accurate and well-retained knowledge of human anatomy and physiology than those which cling to the traditional curriculum.

The reorganization of teaching, to use most effectively all the skill and interest of the entire staff in teaching the fundamentals, including human anatomy, and to give each student his opportunity to dissect at the time when this would be most valuable to him, is by no means an impossible task. It would require far less time, energy and paper work than organizing a small commando raid or supplying a division for a week's independent maneuvers. Unless one denies the

possibility of effective self-government, it seems reasonable to believe that such a program could be carried through successfully even without an "academic dictator."

SUMMARY

Human dissections are now performed by freshmen in medical schools because of a tradition several centuries old. The procedure should be recognized as being chiefly of utilitarian value, and since it is needed only for the precise orientation in physical diagnosis, surgery and radiology, it would be preferable to have it given later in the curriculum. Since unused knowledge undergoes rapid atrophy and information put to immediate use tends to be fixed, various parts of the dissection and teaching in human neuroanatomy should be given at the time when precise knowledge is most keenly needed by the student. Finally, since giving instruction in a subject is the best training of all, the younger members of the clinical staff should participate in the teaching of human anatomy in their respective fields.

Instruction in cytology, histology and the general features of human anatomy would be more effective if given as part of a wide program including biochemistry, biophysics and physiology. Form and function should not be divorced, and the great interest in physiological research which distinguishes the American school of anatomists should be utilized in teaching physiology. While a department of anatomy and physiology can best coordinate the work of the men now forming the staffs of these departments, it might also be possible to work out a program in which men from these and other departments would form mixed "task forces" to present various fields and coordinate the teaching of human biology as a whole. The first year medical student needs such a broad and secure foundation rather than minutiae of human anatomy which he has no occasion to use for a year or two.

Anatomical Research in the United States During the Past Thirty Years

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The purpose of this article is to present the results of a statistical study made of some of the anatomical research done in the United States during the past thirty years. The last three decades, roughly the interval between the two great World Wars, represents a period characterized by free, expanding, unbridled research by investigators interested in anatomy. During the latter part of this era, a great socializing process has been going on in this country, which may continue. Whether such a political trend may eventually affect research by attempting to direct it into certain channels is speculative, nevertheless, it is felt that a review of the accomplishments of anatomical investigators at this time may be of value.

A total of 3,655 separate investigative articles have been analyzed. The source of the material is the anatomical abstracts published in the *Anatomical Record* during the interval from 1912 to 1942 inclusive. It is realized that such a study is not entirely complete and does not take into consideration the quality of the work. Yet, it should tell some sort of comprehensive story of what has been achieved. The following features of each problem have been cataloged: school contributing, type of animal utilized, classification according to the zoological literature, region of the body studied and the number of authors.

TABLE 1—The Fifteen Schools Whose Departments of Anatomy Have Contributed the Most Number of Articles at the National Anatomical Meetings Held Between 1912 and 1942

School	No.	School	No.
Minnesota	207	Virginia	84
Northwestern	185	Washington University	83
California	139	Pennsylvania	79
Johns Hopkins	130	Stanford	72
Yale	118	Loyola	70
Carnegie Institute of Washington	112		
University of Chicago	110		1,687
Cornell	109	Other schools	1,968
Harvard	103		
Columbia	86	Total	3,655

Table 1 indicates the fifteen schools whose departments of anatomy have contributed the most number of papers at the national anatomical meetings held between 1912 and 1942. Of the total of 3,655 papers examined, Minnesota presented 207; Northwestern, 185; California, 139; Johns Hopkins, 130; Yale, 118; Carnegie Institute of Washington, 112; University of Chicago, 110; Cornell, 109; Harvard, 103; Columbia, 86; Virginia, 84; Washington University, 83; Pennsylvania, 79; Stanford, 72 and Loyola, 70. The middle west and northeast have, therefore, made strong showings in respect to numbers. In the

south, it is Virginia and in the far west California and Stanford. Other institutions ranking high are the following: Missouri, 69; Illinois, 62; St. Louis University, 61; Buffalo, 61 and Vanderbilt, 53. Many other medical, anatomical departments have recently taken up the banner of science and are making creditable records. In late years, the undergraduate institutions have been prolific in presenting papers at the anatomical meetings, their total to date being 451.

TABLE 2—The Numbers, Percentages and Order of Animals Utilized in 3,655 Anatomical Research Problems in the U. S. Between 1912 and 1942

Order of animal	Number	Percentage
Rodents	974	26.7
Submammals	868	23.7
Primates	772	21.2
Carnivores	378	10.3
Unclassified	210	5.7
Ungulates	123	3.4
Comparative—including human	100	2.7
Comparative—human not included	99	2.7
General—no animals used	64	1.7
Marsupials	38	1.0
Others	29	0.9
	3,655	100.0

Apparently, many orders of animals have been studied by our anatomical investigators. Leading the list, according to the present study, is the group rodentia, with 974, followed by submammals 868; primates, 772; carnivores, 378; ungulates, 123; marsupials, 38, and others, 29. In 100 papers, a comparative study was made which included man; ninety-nine other papers showed a comparative study which did not include man; sixty-four of the investigations dealt with general subjects in which no animals were used; two hundred and ten of

TABLE 3—Classification of the Zoological Literature of 3,655 Anatomical Investigations Done in the U. S. Between 1912 and 1942. Man Is Included in the Total List and Also Separately

Classification for all animals in the series	Number	Percentage	Number for man	Percentage for man
Embryology	914	25.0	219	34.1
Histology	727	19.9	111	17.3
Endocrinology	412	11.3	11	1.7
Physiology	379	10.4	38	5.9
Gross Anatomy	282	7.7	135	21.0
Cytology	230	6.3	6	0.9
Biochemistry	227	6.2	6	0.9
Pathology	176	4.8	26	4.1
Biometry	99	2.7	46	7.2
Others	209	5.7	44	6.9
	3,655	100.0	642	100.0

the articles were unclassified. Thus, there has been a tendency for anatomists to work on animals ranking low in the phylogenetic scale. One-half of the problems have been done on rodents and submammals (Table 2).

The study indicates that embryology has been a favored investigative approach, 914 of all papers being in this category; 727 were on histology; 412 on endocrin-

ology; 379 on physiology; 282 on gross anatomy; 230 on cytology; 227 on biochemistry; 176 on pathology and 99 on biometry. The others consist of scattered subjects and total 209. During the past ten years, studies in endocrinology have gained relatively over the other fields (Table 3).

The part of the body which has been most examined is the nervous system, there being 749 investigations on this region. Others, in the order of their frequency, are the following: urogenital system, 521; osteology and muscles, 375; glands of internal secretion, 362; cardiovascular system, 360; digestive system, 180; sense organs, 152; skin and mammary gland, 136; lymphatic system, 83, and respiratory system, 61. Four hundred and seventy one of the articles were on general adult anatomy; 162 were on general developmental anatomy and 42 were on laboratory equipment or service (Table 4).

TABLE 4—Systems or Regions of the Body Studied in 3,655 Anatomical Investigations in the U. S. Between 1912 and 1942. Man Is Included in the Total List and Also Separately

	Total	Percentage	Man	Percentage
Nervous system	749	20.5	97	15.1
Urogenital system	521	14.2	60	9.3
General adult anatomy	471	12.9	69	10.7
Osteology and musculature	375	10.3	102	15.9
Glands of internal secretion	362	9.9	28	4.4
Cardiovascular system	360	9.8	77	12.0
Digestive system	180	4.9	47	7.3
General developmental anatomy	162	4.4	68	10.6
Sense organs	152	4.2	35	5.5
Skin and mammary gland	136	3.7	28	4.4
Lymphatic system	83	2.3	9	1.4
Respiratory system	61	1.7	22	3.4
Laboratory service	43	1.2	0	0.0
	3,655	100.0	642	100.0

TABLE 5—Statistics Showing Single and Co-authorship of 3,655 Anatomical Investigations Done Between 1912 and 1942

Number of authors	Number of papers	Percentage
1	2,852	78.0
2	674	18.5
3	111	3.1
4	11	0.3
5	1	0.0
6	5	0.1
7	0	0.0
8	1	0.0
	3,655	100.0

Seventy-eight per cent of the investigations were performed by one man for each problem; 18.5 per cent had two authors; 3.1 per cent had three authors; 0.3 per cent had four authors and 0.1 per cent had six authors. Only one paper had eight authors. The policy of co-authorship has increased in later years and especially since the year 1921 (Table 5).

Of the 772 investigations quoted for primates, 642 were on man and 130 were on other members of the primate group. In man, 219 of the articles were on

embryology; 135 on gross anatomy; 111 on histology; 38 on physiology; 46 on biometry, 26 on pathology and 11 on endocrinology. Only 2.6 per cent of the total number of articles pertaining to endocrinology were concerned directly with man (Table 3). In respect to the regions of the body studied in man—97 were on the nervous system; 77 on the cardiovascular system; 71 on osteology; 60 on the urogenital system; 47 on the digestive system; 35 on the sense organs; 28 on the glands of internal secretion; 28 on the skin and mammary gland; 22 on the respiratory system; 21 on the musculature; 10 on the articulations and 9 on the lymphatics. Sixty-eight were on general developmental anatomy and 69 on general adult anatomy (Table 4).

On the basis of this study, it seems best to say that the purpose of anatomical investigation in this country is to increase anatomical knowledge over a field which includes the entire zoological kingdom and particularly the lower ranking vertebrates. Almost all of the research on man is pure, descriptive anatomy. Over a period of thirty years, the embryological and histological approaches have been favored, with endocrinology running a strong third. About one-third of all the investigations examined have been on the nervous and urogenital systems. Finally, certain schools (Table 1) have been consistent in presenting research papers at the anatomical meetings over a thirty year period and in the last decade co-authorship has numerically increased. Probably but very little of our research becomes utilized by clinical men. Since it is unregulated, a great amount of it is bound to be heterogeneous and uncorrelated. Much of it may have become buried. I believe more review papers would be of help in bringing the numerous fields of anatomy and other medical subjects up-to-date. Capable men, with access to first class libraries, would perform a needed service in the capacity of review writers. Undoubtedly, it has cost millions of dollars and taken hundreds of thousands of man hours to produce the research referred to above. At best, the most we can hope for is that it will serve as a foundation on which future investigators can build.

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The 1942 Annual Meeting

The fifty-third annual meeting of the Association of American Medical Colleges was held in Louisville, Kentucky, October 26-28th, under the presidency of Dr. Loren R. Chandler, dean, Stanford University School of Medicine.

The attendance was better than usual —and it is always large. The program received much commendation and was very timely as to the topics presented since many of them were related to national defense; the interest displayed in all the activities of the Association—many of them of service to national defense and available to all Federal agencies dealing with every phase of national defense—was splendid and most encouraging to the continuation of these activities, most of them not being duplicated anywhere.

The Association placed itself at the disposal of the Federal government in every effort directed to securing as large a supply of medical personnel as possible in the shortest possible period of time without any lowering of present minimum standards of medical education. One hundred per cent cooperation was assured.

Selective Service was represented by Colonel Leonard W. Rountree, medical advisor, and the medical departments of the Army and Navy were represented by Brigadier General Larry B. McAfee, assistant to the Surgeon General of the Army, Captain Charles S. Stephenson, of the Medical Corps of the Navy, Colonel George W. Callender of the Medical Corps of the Army—all of whom spoke for their respective services, their needs, how they can be met with an offering of their help in preparing men for special medical service to the armed forces of the United States as well as the civilian population. Tropical medicine was stressed. Plans are being made to meet the needs of this particular specialty in medicine and financial aid has been offered by the John R. and Mary Markle Foundation. Details as to these plans will be forthcoming shortly.

The assurance of a continued supply of medical students, the maintenance of an adequate, qualified, teaching faculty of the medical schools, provision for further training of interns as residents to serve in special fields of medicine and the twelve months' internship were also subjects of discussion. The Association stands ready to assist in making all this possible without any lowering of present minimum standards of medical education.

The following officers were elected for the year 1942-1943: President, Dr. W. S. Leathers, Vanderbilt University; president-elect, Dr. E. M. MacEwen, State University of Iowa; vice-president, Dr. John Walker Moore, University of Louisville; secretary, Dr. Fred C. Zapffe, Chicago; treasurer, Dr. A. C. Bachmeyer, University of Chicago. Dr. Willard C. Rappleye, Columbia University, was re-elected a member of the Executive Council, and will serve as its chairman; Dr. A. C. Furstenberg, University of Michigan, was elected a member of the Council. The other members of the Council are: The president, president-elect, past president, vice president and Dr. Maurice H. Rees, University of Colorado and Dr. Russell H. Oppenheimer, Emory University.

The membership of the Committee on War Activities consists of Dr. Willard C. Rappleye, chairman; Dr. Maurice H. Rees, Colorado; Dr. Fred C. Zapffe, Chicago; Dr. C. Sidney Bur-

well, Harvard, and Dr. Harold S. Diehl, Minnesota.

The 1943 meeting will be held in Cleveland, Ohio, October 25, 26 and 27. The School of Medicine, Western Reserve University will be the host. Dr. Torald Sollmann, dean of the school, will have charge of local arrangements for this meeting.

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"Don't Stick Your Neck Out"

Of all the damnable weapons ever invented by man to tyrannize over his fellows, the advice, "Don't stick your neck out," is surely the most damnable. It kills initiative and makes cowards of us all. In our schools and colleges it reigns almost supreme and kills scholarship. Even the most inspiring and heaven born teacher, fighting for the souls of his students, trying to lead them toward the light, stimulating them to ask questions rather than to answer them, can find his efforts reduced to naught by one sneering soul holding a class in thrall by the lash of his whip, "Don't stick your neck out."

Can this dragon ever be enchained or destroyed? I think it can, but only by changing the attitude of our students toward their teachers. Not so easy, I hear you say. I disagree. The dragon thrives because his present environment is to his liking. The teacher is commonly regarded as almost an enemy, a driver with an axe which will unmercifully behead the tardy student at the end of the session. He is the man who must be outwitted in order to obtain passing grades. He must be propitiated. His ire must be avoided. Don't stick your neck out, and invite his irony, his ridicule.

We must starve the dragon by changing his environment. There are two ways of doing this: (a) Thirty years ago, I heard the beloved William Osler say, not once but many times, "Boys, we are all ignorant students, fellow travellers on the same road to knowledge. I am not too sure of the road myself. But I have been travelling this road for a few more years than you have, and I know some of the difficulties. Perhaps I can help you. At any rate let us hitch up our packs and travel forwards together." Those may not have been the exact words, but the idea is there. No wonder every student loved Osler, his patience, his understanding, his sympathy. He led us forward. That is what the word E-duc-ation means.

(b) At present, in most of our colleges and universities, the teacher is also the examiner. No matter how friendly he may be, he is the enemy. In the older universities in England and in a few American colleges, led by Aydelotte of Swarthmore, the system of external examiners has been adopted. Student and teacher are no longer antagonists. Side by side they now face the external examiner together. The teacher is also under trial. He and the student become cooperators, requiring all the loyalty, help and camaraderie that they can mutually give. The student now feels he can ask questions and seek help freely. Under such conditions nothing but good can follow—mutual confidence, friendship, loyalty. "Don't stick your neck out" atrophies and dies. *Requiescat in pace!*— FRANK L. APPERLY (Medical College of Virginia).

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The Place of the Humanities in Education

In the *Journal of Higher Education*, October, 1942, Professor Theodore M. Greene, McCosh Professor of Philosophy and chairman of the Divisional Program in the Humanities, Princeton University, discusses admirably the place of the humanities in education. Medical educators have stressed the need for more of this for students who intend to study medicine. They have pleaded for the minimum requirement in the sciences prescribed and have urged among suggested additional subjects more of the humanities. Professor Greene expresses these thoughts well. He says:

"All the humanities depend, first, upon linguistic discipline, if the term *linguistic* be taken broadly and inclusively. A training in the humanities is a

training in the languages, verbal and artistic, with the aid of which men have reflected upon values, recorded their insights in the realm of values, and communicated with one another regarding objective values. One of the tragedies of American education today is the considerable failure of our students, for one reason or another, to master those languages which they must master in order to achieve an understanding of their cultural heritage, and in order to be articulate and to communicate with one another on these matters. The humanities must attempt to make good this failure by providing students with a linguistic discipline.

"Second, the humanities are exploratory disciplines. They involve a mastery of all the techniques necessary to the exploration of fact, because values, as we know them, are never merely disembodied values, but are values embodies in our world of fact. Aesthetic values have their locus in works of art, which, in turn, are facts in the historical matrix. Moral values have their locus in human beings who exist in history. Religious values in all the great religions have been, in one way or another, incarnational, and in our Christian tradition, uniquely incarnational. This means that education in the humanities is a discipline in fact finding and factual interpretation. A person cannot be said to have received a sound humanistic education who is not factually informed and trained in the art of finding new facts and interpreting these facts wisely, critically, and shrewdly.

"In the third place, the humanities are disciplines in sensitive appreciation.

"One of the functions of the humanities is, therefore, to sharpen our aesthetic, moral and religious sensitivities — our capacities for imaginative insight into moral, aesthetic and religious values. Fourth, the humanities are disciplines in wise reflection, seeing any particular problem in its proper perspective. This perspective, in turn, is always a dual perspective, partly historical and partly systematic or philosophical. For there are two and only two ways in which things can be related to one another—in time, and in terms of similarity, difference and systematic relationship. The historical perspective is quite essential for any understanding of the past in its relation to the present, of the present in its relation to the past, and of the future in its relation to both the past and the present.

"Again, one of the humanistic disciplines which has fallen on evil days is the discipline of philosophy. Unless we have some training, some discipline, in viewing things systematically in their relation to one another—morality in its relation to religion, both in their relation to art and literature, all three in their relation to science, and all humane insights and activities in their relation to social organization and corporate action — we remain essentially and necessarily provincial. We see the first with a myopia that blinds us to its true character; we cannot truly comprehend it in isolation or judge and evaluate it wisely in its relation to a larger whole.

"Since it is a primary function of the humanities to make men wise, since wisdom is the product of reflection, and since reflection involves a synthesis of these two great essential perspectives—the historical and the systematic or philosophic—it follows that discipline in wise reflection is a necessary part of humanistic education.

"Finally, the humanities can and should provide a discipline in reflective commitment. This is the aspect of formal education which has perhaps been most neglected during recent years. We have come to think of the 'academic' attitude as one of endless investigation and argument without decision or commitment—of never making up one's mind on anything, of never taking sides on anything of never committing oneself to anything."

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1941 Freshmen

The returns from all the medical colleges show that the 1941 freshman class numbered 6,420 students as against 5,961 students in 1940, an increase of about 9.5 per cent. More students had a

clear record in 1941 than in 1940 but the percentages of failing students was slightly greater—by about one per cent, which is not a bad record considering the increase in the numbers of students. A full report on the accomplishment of the 1941 students will be published in the JOURNAL later.

The size of the present freshman class cannot be stated because not all the colleges have sent in their enrollment blanks. Present indications are that it will not be as large as the 1941 class although this statement may need to be revised when the count is completed. All but two colleges are now on the accelerated program or will be by next March. One two year school will go on a four year program next March leaving only eight colleges in the two year group.

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Credentials of 1942 Freshman Class

For the 1942 freshman class, 6,339 enrollment blanks have been received. Some colleges send blanks for repeaters, some do not. At the end of the year all freshman students are reported on as to their accomplishment, hence the total for enrollment blanks is always less than the actual number of freshman. On this basis, it is probable that the number of 1942 freshmen will be about 6,500. In 1940, enrollment blanks were filed for 5,860 students. The number reported at the end of the year was 5,961. In 1941, 6,244 enrollment blanks were received and 6,420 students were reported at the end of the year. One college admits students quarterly. For the present year, two admissions will be made, approximately 65 students.

In the present freshman class there are 101 students who had less than three years of college work, 1.6 per cent of the total number enrolled; 40.0 per cent had three years of college work; 4.4 per cent had four or more years but do not hold a degree, and 54.0 per cent had degrees —56.4 per cent holding an A.B. or better; 43.6 per cent holding a B.S. or better; more than one degree—137 students; 299 women are enrolled.

While a few colleges matriculated fewer students this year than in 1941, others report an increased enrollment. In 1941, the increase over 1940 was 9.5 per cent. This year it will probably be about 10 per cent over 1940—0.5 per cent over 1941. This is evidence that the medical colleges are doing all in their power to assist the Federal government in securing as large a number as possible of medical personnel without any lowering of minimum standards of admission or curtailment or abridgment of courses, despite the fact that new courses have been added and others enlarged to meet war needs. This is especially true for tropical medicine and military medicine. All medical colleges, except two, are now on the accelerated program. The very considerable depletion of teaching faculties in medical colleges presents a very serious problem for the continuation and maintenance of the best type of instruction—but the medical colleges are doing their utmost to solve this problem by increasing teaching loads and by addition of qualified instructors —although that is by far the most difficult problem because qualified instructors cannot be made to order. Experience in teaching, as well as ability, is an important factor in this respect. Exchange of instructors may offer a solution if a sufficient number are available and if they are willing to give that service. However, it is a way out of the difficulty.

College News

Yale University
School of Medicine

Dean Francis G. Blake announces that a large group of medical texts, including original treatises by Vesalius, Fabricius and Tagliacozzi, the gift of Dr. Joseph Marshall Flint, professor of surgery from 1907 to 1921, has been given to the historical library of the School of Medicine. At the same time, Dean Blake announced the establishment of the John E. Lane Collection of prints, to be built up around a nucleus of 136 medical engravings given to the library by Dr. George Blumer, David P. Smith Clinical Professor of Medicine, emeritus. The John E. Lane Collection will include, in addition to Dr. Blumer's gift, the entire collection of prints belonging to the medical school, many of which came to the library through Dr. Harvey Cushing's bequest, as well as all other prints which may be added in the future. The collection is named in memory of the late Dr. John E. Lane, who received his B.A. degree from Yale in 1897. Dr. Lane attended the Yale University School of Medicine and remained there in various capacities from 1897 until his death in 1933. He served as a clinical professor of dermatology at Yale from 1920-1923 and from 1930-1933.

Yale will offer a graduate course designed primarily for physicians of Connecticut on "Industrial Health and Medicine in War Time." The course is under the joint direction of Dr. William T. Salter, professor of pharmacology, Dr. John R. Paul, professor of preventive medicine, and Dr. C.-E. A. Winslow, chairman of the Department of Public Health.

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Long Island
College of Medicine

Dr. Thomas D. Dublin, epidemiologist in the New York State Department of Health, has been appointed head of the Department of Preventive Medicine and Community Health. Dr. Dublin received his medical degree from the Harvard University Medical School and his degree of Doctor of Public Health from the Johns Hopkins University School of Hygiene and Public Health. During the last few years he has been associated with the New York State Department of Health in various capacities and for the last year has been serving as epidemiologist in the Division of Communicable Diseases. Prior to his recent appointment, Dr. Dublin held appointments as instructor in preventive medicine at both the Johns Hopkins University Medical School and the Albany Medical College.

A postgraduate course in industrial medicine will be given under the auspices of the department of preventive medicine and community health. Lectures and clinics will be held from November 2 to November 13. Industrial "internships" will be the topic from November 16 to December 12, 1942. The course will be conducted principally by physicians in industrial medical practice. The fee for the course is $50. For details, apply to the Dean, 350 Henry Street, Brooklyn.

A development in postgraduate industrial medicine courses is the month's "internship" in the medical departments of industrial establishments which the College has arranged. Plans have been completed to provide opportunities for additional supervised training in the medical departments of eleven selected industrial organizations between November 16 and December 12. Physicians electing to serve these "internships" may thus obtain experience according to their interests and preferences. They will also prepare themselves to accept the numerous positions awaiting trained doctors in the industrial field. The first "internship" appointments are being made and it is expected that by the time the course

begins on November 2 all applicants who can be placed under wartime conditions will have received appointments for their month of practical work in industrial medical departments.

The companies which have offered to accept one or more "interns" for training are: American Cyanamid Company, Calco Chemical Division, Bound Brook, New Jersey; American Telephone and Telegraph Company, New York City; Bell Laboratories, New York City; Brooklyn Union Gas Company, Brooklyn, New York; Consolidated Edison Company, New York City; Corn Products Refining Company, Argo, Illinois; Dow Chemical Company, Midland, Michigan; Merck & Co., Inc., Rahway, New Jersey; New Departure Division, General Motors Corporation, Bristol, Connecticut; New York Telephone Company, New York City; Republic Aviation Corporation, Farmingdale, Long Island. The College has followed the standards established by the American College of Surgeons for approved industrial medical departments in selecting firms for "internships." Typical of the kind of "internship" training which will be provided is the program set up by Dr. John J. Wittmer, medical and personnel director of Consolidated Edison Company. Dr. Wittmer is co-chairman with Dr. Cassius H. Watson, medical director of American Telephone and Telegraph Company, of the Advisory Committee of industrial physicians and experts established to give the College counsel on the planning of this course, which is the first it has offered in this field. Both Dr. Wittmer and Dr. Watson are alumni of the College. The Consolidated Edison plan provides for the "intern" to take his month's training in one or more of the eleven dispensaries of the company in greater New York. Some of the work will be done in the company's central medical department.

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Meharry Medical College

The Carnegie Corporation, New York, has given Meharry $50,000 to serve as a fund to meet emergencies that have arisen and that will arise as a result of the war. A grant of $250,000—to be paid over a five year period—received from the W. K. Kellogg Foundation has been reported previously. These grants will help Meharry to meet some of the many problems arising from its efforts to advance Negro professional education.

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University of Texas
School of Medicine

Correction: Dr. Chauncey D. Leake, was appointed dean and executive vice president of the Medical Branch and principal administrator of hospitals at the will of the Board and under the existing rules of the Board . . . which require that "all administrative officers of the University report to the Regents through the president." This correction was submitted by Dr. K. H. Aynesworth, vice chairman of the Board of Regents of the University of Texas. The previous announcement stated that Dr. Leake will be responsible directly to the Board.

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University of Illinois
College of Medicine

The College is one of two colleges training brain surgeons for the Army. Dr. Eric Oldberg, head of the department of neurology and neurosurgery will be in charge. Dr. Wm. H. Cassels will give advanced instruction in anesthesiology and Dr. Warren H. Cole, head of the department of surgery, will teach chest surgery.

The Illinois Eye and Ear Infirmary, a state institution under the jurisdiction of the state department of welfare, has been transferred to the College of Medicine, to give the infirmary a larger and more comprehensive medical staff, to expand clinical work and to provide more training facilities for students and physicians. Dr. Harry S. Gradle is medical director and Dr. John B. Cipriani is managing officer of the infirmary. It now has a capacity of 220 beds and last year accommodated 112,000 outpatients. During the last few years the infirmary has

maintained a special glaucoma service with the aid of a grant from the Otho S. Sprague Foundation, by which glaucoma patients are encouraged through the efforts of a medical social worker and a special staff of physicians to continue treatments. The infirmary also cooperated in the establishment of trachoma clinics in southern Illinois, where patients from nineteen counties have received treatment.

The John and Mary R. Markle Foundation has authorized a grant-in-aid of $7,000 over a two year period for the support of the research in experimental renal hypertension, under the direction of Dr. George Wakerlin, professor and head of the department of physiology. Clarence A. Johnson, Ph.D., assistant professor in physiological chemistry, and others are associated in the investigation.

◆ ◆

Northwestern University
Medical College

Dr. Loyal Davis, professor of surgery, has been appointed Lt. Col., U. S. Army, as a consultant in neurosurgery, on duty in the office of the Surgeon General.

Dr. Arthur I. Kendall, research professor of bacteriology, dean from 1916 to 1924, retired on age.

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State University of Iowa
College of Medicine

Dr. E. M. MacEwen, dean and Chief of Emergency Medical Services for Johnson County, has appointed a subcommittee from the College of Medicine to cooperate with the local branch of the Office of Civilian Defense. The members are Dr. P. C. Jeans, Chairman; Miss Lois B. Corder, Doctors T. J. Greteman, H. D. Kerr, C. I. Miller, Mr. R. E. Neff and Dr. W. W. Tuttle. Iowa City has been designated as one of the possible disaster areas of the state. Six emergency teams have been organized. Each team consists of volunteer personnel from the staff of the University Hospitals and students of the College of Medicine. The physicians are selected from the non-surgical departments, so as to permit properly organized operating teams within the hospital should a disaster occur. Emergency kits assembled by the operating room staff are available. The hospital ambulance system has been organized for immediate action by Mr. Neff.

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Emory University
School of Medicine

Dr. Goodrich C. White, dean of the Graduate School and vice president, has been appointed president, succeeding Dr. H. W. Cox, resigned. Dr. Cox has been appointed chancellor.

Dr. James A. Paullin, professor of clinical medicine, was chosen president-elect of the American Medical Association.

◆ ◆

University of Oklahoma
School of Medicine

Dr. Robt. U. Patterson has resigned from the deanship having reached the retirement age of 65.

Dr. Alton Clair Kurtz, formerly instructor in the Department of Biochemistry, University of Pennsylvania, was appointed assistant professor of biochemistry. Dr. Ollie Boyd Houchin, formerly in the Division of Physiological Chemistry at Yale University, was appointed instructor in pharmacology. Dr. Samuel A. Corson, formerly instructor in the Department of Physiology of the University of Texas at Austin, was appointed assistant professor of physiology.

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New York University
College of Medicine

Dr. S. Bernard Wortis, associate professor of neurology has been appointed Lucius N. Littauer professor of psychiatry. Mr. Littauer, in 1941, gave nearly $250,000 for research in psychiatry, neurology and related fields. Dr. Menas S. Gregory, formerly professor of psychiatry, bequeathed $40,000, one-half to establish an annual lectureship and one-half as an endowment of a professorship in the department of psychiatry.

Louisiana State University
New Orleans

First Lieutenant J. C. Swartzwelder, M.C., formerly assistant professor in the Department of Public Health of the School of Medicine, is now on active duty in the United States Army, and is stationed at LaGarde General Hospital in New Orleans.

Dr. Marion Winifred Hood, formerly with the University of Illinois College of Medicine, has recently been appointed assistant professor of parasitology in the Department of Public Health. Dr. Hood received her M.A. degree from the University of Wisconsin, and her Ph.D. from the University of Illinois College of Medicine.

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Marquette University
School of Medicine

Because of the irregularities of graduation occasioned by the acceleration of the program of studies for the duration of the war, the Executive Faculty has decided to discontinue the fifth or intern year as a requirement for the degree of Doctor of Medicine.

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University of Minnesota
Medical School

New appointments to the full time staff of the Students' Health Service include those of Ramona L. Todd, Ph.D., and Dr. Myron M. Weaver, director of the health service at Knox College, Galesburg, Ill., and former director of the health service at Carleton College, Northfield. Dr. Lawrence R. Boies, Minneapolis, was recently promoted from clinical associate professor in the division of otology, rhinology and laryngology to clinical professor and director of the division.

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University of Southern California
School of Medicine

Gordon H. Scott, Ph.D., associate professor of histology, Washington University School of Medicine, has been appointed professor of anatomy.

University of Colorado
School of Medicine

A preventive medicine clinic has been established. The clinic will be operated through the collaboration of the Junior League of Denver, Colorado General Hospital, Colorado Psychopathic Hospital and the medical school. Under the agreement between the Junior League of Denver and the university's board of regents the range of work of the clinic will include comprehensive health examinations for industrial and other employee groups, students and indigent patients; physical, social and industrial rehabilitation, and clinical facilities to aid in teaching medical and nursing students aspects of industrial medicine and individual rehabilitation. Newspapers reported that support for the clinic will be obtained by annual contributions from the Junior League and several industrial concerns. The project, which will offer opportunities for volunteer service by league members, will be housed in the Verner Z. Reed clinics of the medical school's outpatient department with a committee of three league members and three representing the school and hospitals supervising. Dr. James J. Waring, Denver, chairman of the clinic committee representing the medical school and hospitals, will be clinic director and Dr. Frank C. Golding, Denver, will be his assistant. Consultants will include Drs. Edward R. Mugrage, professor of public health and laboratory diagnosis, and Donald E. Cummings, B.S., director of the medical school's division of industrial hygiene and associate professor of medicine.

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Medical College of the
State of South Carolina

Dr. Rhett G. Harris, instructor in bacteriology, resigned to join the armed forces as 1st Lieutenant in the Sanitary Corps. Dr. Raymond M. Young replaces Dr. Harris.

Dr. Robert Walton, formerly a member of the faculty of the medical college of the University of Mississippi, has been elected professor of pharmacy to succeed

Dr. W. H. Zeigler, who died during the summer.

Dr. John Arthur Siegling, after several years' residence in Illinois where he was in charge of the department of bone and joint surgery at the Carle Clinic at Urbana, will be on the faculty of the medical college in orthopedic surgery.

Dr. W. G. Sink, formerly of the faculty of the Citadel, has been appointed to the chemistry department of the medical college.

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University of Chicago
School of Medicine

Dr. Morris Edward Davis, associate professor of obstetrics and gynecology at the University of Chicago School of Medicine, has been promoted to professor, and Dr. Henry Close Hesseltine has been promoted to associate professor of obstetrics and gynecology.

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Baylor University
College of Medicine

Baylor has decided to go on the accelerated program. The present session will end May 31, 1943. The succeeding session will begin June 21, 1943, and will end March 13, 1944. Thereafter, during the duration of the war, a new class will be admitted and a class graduated approximately every nine months.

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Columbia University College of
Physicians and Surgeons

Aura E. Severinghaus, Ph.D., associate professor of anatomy, has been appointed assistant dean, succeeding Dr. Vernon G. Lippard, now in government service.

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Medical College of Virginia

The College has received a gift of $1,000 for student loans and $10,500 from the American Tobacco Company for research in physiology and pharmacology.

University of Pittsburgh
School of Medicine

The Western Pennsylvania Psychiatric Hospital has been opened on the campus of the University of Pittsburgh. The new institution will offer treatment, care and welfare of patients, research and teaching. The new unit will form a part of the medical center at the University of Pittsburgh, consisting of the medical school, the Falk Clinic and Presbyterian, Woman's, Eye and Ear, Municipal and Magee hospitals.

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University of Virginia
Department of Medicine

Faculty changes: Dr. H. B. Mulholland has been appointed assistant dean; Dr. Samuel Alexander Vest has been promoted from associate professor to professor of urology; Dr. Lawrence T. Royster resigned as professor of pediatrics; Dr. Robert Bennett Bean retired as professor of anatomy.

October 12, Dr. Cecil K. Drinker of the Harvard University School of Public Health gave the annual Alpha Omega Alpha address. His subject was "The Genesis and Resolution of Lung Transudates and Exudates as Viewed by a Physiologist."

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Harvard Medical School

Dr. Henry A. Christian, Hersey professor of the theory and practice of physic, emeritus, has been invited by the president and fellows of Harvard to return to active duty to give clinical instruction. He has also been appointed visiting physician at the Beth Israel Hospital in Boston.

Dr. René J. Dubos has been appointed George Fabyan professor of comparative pathology and professor of tropical medicine succeeding Dr. Ernest E. Tyzzer who becomes professor emeritus.

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Jefferson Medical College

Dr. Wm. H. Schmidt has been appointed associate professor of physical therapy.

Stanford University
School of Medicine

A new laboratory of electroencephalography has been opened. The new instrument has been under construction and adjustment for nearly ten months. At present the new laboratory is being used part of each day for testing by the military services. The electroencephalograph just completed is unique among such apparatus in that it is entirely remotely controlled, thus avoiding electrical interference. It holds a newly invented automatic calibrating device to give instant interpretation of the currents being recorded. The apparatus consists of four sets of amplifiers housed within a single unit. The Irwin Foundation, San Francisco, has supported the project.

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University of Utah
School of Medicine

It is announced that the decision has been reached by the Board of Regents of the University to establish a four year school of medicine to replace the present two year school organized in 1906. The first clinical session will begin in March, 1943. Classes will be limited to 40 students. Surveys made have shown the feasibility of this move. The dean will be Dr. A. Cyril Callister who has been a member of the faculty for twenty-two years. Dr. C. B. Freudenberger, professor of anatomy, is now associate dean. It is planned that the heads of the four major clinical departments shall be full time professors without privilege of private practice. An agreement has been reached with the Salt Lake General Hospital that the staff be nominated by the medical school. Teaching will also be done in other hospitals in Salt Lake City and outside which will insure an ample supply of clinical teaching material. The school will serve industry by studying occupational diseases and hazards in the mining and smelting industries and will interest itself deeply in public health by promoting and manning prenatal clinics, doing home deliveries for the city, well baby clinics, venereal disease clinics and the prevention of disease. It will work in close liaison with the State Board of Health. Refresher and post graduate courses will be given and graduate study will be promoted by making available opportunities for medical research. In short it aims to set up a medical center for that section of the country.

Lewis P. Gebhardt, Ph.D., M.D., formerly assistant professor of bacteriology in the Stanford University School of Medicine, has been appointed associate professor of bacteriology and pathology. Robert E. Hoyt, Ph.D., formerly instructor in bacteriology in the University of Minnesota Medical School has been appointed assistant professor of bacteriology and pathology.

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Howard University
School of Medicine

Beginning with the freshman class entering September 26, 1942, the school will operate on the accelerated program. All classes will accelerate.

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Temple University
School of Medicine

Temple has received a grant of $2,500 from the John and Mary R. Markle Foundation for research. The grant has been especially designated to further the research problem by Dr. Dean A. Collins, assistant professor of physiology, and Dr. Angie S. Hamilton. Their study is on "Renal Hormonal Mechanism in Hemorrhage, Shock and Other Conditions." The grant from the Markle Foundation is the second within recent months, for last May a sum of $2,900 was awarded to the School for a study of body fluids in children with persistent acidosis, which work is being directed by Dr. Waldo E. Nelson, professor of pediatrics.

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University of Maryland
School of Medicine

Dr. Robert U. Patterson, former dean of the School of Medicine, University of Oklahoma, has been appointed dean. He assumed his new duties November 1.

General News

Announcement of Research Fellowships in Medicine, Dentistry, and Pharmacy in the University of Illinois for the Year 1943-44

Applications for Research Fellowships in medicine, dentistry and pharmacy in the University of Illinois are now being considered for the year beginning September 1, 1943. Appointments to these fellowships will be announced January 1, 1943. Candidates for these fellowships must have completed a training of not less than eight years beyond high school graduation. The fellowship carries a stipend of $1200 per calendar year with one month's vacation. Application blanks and further information may be secured from the Secretary of the Committee on Graduate Work in Medicine, Dentistry, and Pharmacy, 1853 W. Polk Street, Chicago, Ill.

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Lankenau Hospital Cancer Institute

Lankenau Hospital Cancer Research Institute, Philadelphia, will receive nearly $2,000,000 from the estate of Mrs. Anna C. Burr, who died on March 6. The bequest, which will be used for the study of cancer, will serve as a memorial to Mrs. Burr's husband, Edward H. Burr, who died in 1922.

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"Gastroenterology," New Journal

The American Gastroenterological Association on January 1, 1943, will publish the first issue of a new Journal to be called, *Gastroenterology*. The Journal will be owned by the Association, will be the official publication of the Association, and will be published by Williams and Wilkins Company. It will appear monthly, and the subscription price will be $6.00 per year.

Dr. W. C. Alvarez will be the Editor (after June, 1943) and Dr. A. C. Ivy will be the Assistant Editor. The Editorial Board will consist of Drs. A. H. Aaron (Buffalo), J. A. Bargen (Rochester), H. L. Bockus (Philadelphia), W. C. Boeck (Los Angeles), B. B. Crohn (New York), R. Elman (St. Louis), F. Hollander (New York), Sara Jordan (Boston), J. L. Kantor (New York), B. R. Kirklin (Rochester), P. Klemperer (New York), F. H. Lahey (Boston), F. C. Mann (Rochester), H. J. Moersch (Rochester), V. C. Myers (Cleveland), W. L. Palmer (Chicago), J. M. Ruffin (Durham), R. Schindler (Chicago), and D. L. Wilbur (San Francisco).

Gastroenterology invites for publication clinical and investigative contributions which are of interest to the general practitioner as well as the specialist and which deal with the diseases of digestion and nutrition, including their physiological, biochemical, pathological, parasitological, radiological and surgical aspects.

Manuscripts should be sent to Dr. A. C. Ivy, *Gastroenterology*, 303 East Chicago Avenue, Chicago, Illinois. Letters regarding subscriptions and business matters should be addressed to Mr. R. S. Gill, Williams and Wilkins Company, Baltimore, Maryland.

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Navy Medical School

Capt. Charles W. O. Bunker, commander of the Naval Medical School, Bethesda, Md., was assigned to command the Naval Medical Center at Bethesda and was nominated for promotion to rear admiral. He succeeds Rear Admiral Charles M. Oman, who will become commanding officer of the Naval Convalescent Hospital, Harriman, N. Y. Capt. Paul W. Wilson has been named to succeed Captain Bunker as head of the medical school.

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Tuberculosis Division of U. S. Army

Dr. Esmond R. Long, director of the Henry Phipps Institute, has been commissioned Lieutenant-Colonel, Medical Corps, U. S. Army, in charge of the Tuberculosis Division.

Book News

Advances in Pediatrics

Edited by Adolph G. DeSanctis, M.D., New York Post Graduate Medical School and Columbia University. Associate Editors: Dr. L. Emmett Holt, Johns Hopkins; the late Dr. A. Graeme Mitchell, University of Cincinnati; Dr. Robert A. Strong, Tulane University, and Frederick F. Tisdall, M.D., Hospital for Sick Children, Toronto. Vol. I. Interscience Publishers, Inc., New York. 1942. Price, $4.50.

A collection of personalized monographs by outstanding authorities presenting an annual review of advances in pediatrics. The material has been selected with care and the help of leading pediatricians.

◆ ◆

Human Pathology

By Howard T. Karsner, M.D., Professor of Pathology, Western Reserve University. Ed. 6. J. B. Lippincott Company, Philadelphia. 1942. Price, $10.

Simplified and clarified with much new material added to make it comprehensive and modern; many new and improved illustrations. The book has been entirely reset; about one-half of the text has been rewritten and certain parts have been rearranged. An innovation is two columns to the page which facilitates easy reading. The references now include only those valuable for supplementary reading and are almost entirely to articles in English which will be appreciated by students who can read or understand only that language.

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The Pharmacopoeia of the United States of America Twelfth Revision

By Authority of the United States Pharmacopoeial Convention, May 14 and 15, 1940. Prepared by the Committee of Revision and Published by the Board of Trustees. Official from November 1, 1942.

Here is presented all that is believed to be worth while, because proven to be effective, about drugs and other medicinal agents, their preparations and products, with English and Spanish titles. For the first time, a program is launched for a new Pharmacopoeia every five years, a bound "Supplement" halfway between, and, to meet the frequently occurring situations which require immediate attention, "Interim Revision Announcements" or sheet "Supplements," whenever these are required. By these accelerated procedures, the Pharmacopoeia is endeavoring to keep pace with the rapid developments of modern medicine and the related sciences. The Committee on Revision deserves unstinted praise for its good work.

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Roentgen Treatment of Diseases of the Nervous System

By Cornelius G. Dyke, M.D., Associate Professor of Radiology, College of Physicians and Surgeons, Columbia University, and Leo M. Davidoff, M.D., Chief, Department of Surgery, Jewish Hospital, Brooklyn. Lea & Febiger, Philadelphia. 1942. Price, $3.25.

Roentgen rays are now recognized as a destructive agent and the proper form of treatment for various diseases, including lesions affecting the nervous system. A compilation of present knowledge is presented in this work, is not only timely but needed. In this volume will be found a detailed summary of the reports of the experiences of radiologists interested in this branch of radiotherapy. The work is excellently organized, clearly written and should be most useful to every practitioner.

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Clinical Anesthesia: A Manual of Clinical Anesthesiology

By John S. Lundy, M.D., Head of Section on Anesthesia, Mayo Clinic; Professor of Anesthesia, Mayo Foundation, Graduate School, University of Minnesota. W. B. Saunders Company, Philadelphia. 1942. Price, $9.

The author has contributed much to the subject of anesthesia, not only from the standpoint of the practical use of modern methods of anesthesia but also from the standpoint of research and experimentation. Therefore, this book must be regarded as a most important exposition of the subject, especially of the place of anesthesia in modern surgery. Since experience in the giving of an anesthetic is required of all medical students, they will find here a full and complete description of all methods used to induce anesthesia and its progress, what to do, what to avoid, how to recognize an emergency and how to meet it successfully. The chronology of events relating to anesthesiology and allied subjects, beginning with the year 4,000 B.C. is very informative and interesting. The author has covered the field thoroughly. His vast experience and careful research make this a most valuable work on anesthetics and anesthesia.

First Aid: Surgical and Medical

By Warren H. Cole, M.D., Professor and Head of the Department of Surgery, and Charles B. Puestow, M.D., Associate Professor of Surgery, University of Illinois College of Medicine. D. Appleton-Century Company, New York. 1942. Price, $3.00.

It is well known that medical students have received little, if any, instruction in first aid. Because of the war, the need for knowledge of first aid has impressed itself on medical educators. Many medical colleges have instituted required work in first aid. Doubtless, ere long all medical colleges will include a course in first aid in their curriculum. Therefore, this book is very timely. Although the greater part of the text consists of consideration of emergencies which are related to conditions created by the war, emergencies encountered in civil life are included. Many of them are medical, not surgical. A chapter on anatomy and physiology is included. Wounds, burns, hermorrhage and shock are considered in detail, as well as gas and bomb raids. Since the chief purpose of the authors was to assemble material of practical value, an extensive bibliography is not given. All the illustrations — line drawings — are original. The authors are to be complimented on the excellency of their effort which is the first attempt to provide a text for a course in first aid for medical students.

◆ ◆

A Textbook of Fractures and Dislocations Covering Their Pathology, Diagnosis and Treatment

By Kellogg Speed, M.D., Professor of Surgery, (Rush) University of Illinois. Ed. 4. Lea & Febiger, Philadelphia. 1942. Price, $12.50.

The text has been rewritten and many new illustrations have been inserted. The method of reduction and the kind of anesthesia for the principal types of fractures are presented. The book is a complete text on the subject. The care of open fractures is emphasized and the methods are explained in detail. The general section on the pathology of dislocations and on other symptoms, signs and diagnosis is helpful as are those on the immediate treatment of fractures and on the etiology, mechanisms and treatment of dislocations. The indications for operations and their technique are given concisely but comprehensively. Almost every page contains a helpful illustration and the references which follow each chapter are to articles which are available to all with even modest library facilities. This work will be particularly useful in military practice. It considers, under the major fractures, gunshot injuries which are fully illustrated, chest injuries and a complete discussion of injuries of the spine.

An Introduction to Materia Medica and Pharmacology

By Hugh A. McGuigan, M.D., Professor of Materia Medica, Pharmacology and Therapeutics, University of Illinois College of Medicine, and Elsie E. Krug, R.N., Science Instructor, St. Mary's School of Nursing, Rochester, Minnesota. Ed. 3. The C. V. Mosby Company, St. Louis, Mo. 1942. Price, $3.50.

Primarily written for nurses but medical students will find this an excellent book to get a fuller and better knowledge of drugs, their preparation and uses. Beautifully illustrated.

◆ ◆

Textbook of Medical Treatment

By various authors; edited by D. M. Dunlop, M.D., Professor of Therapeutics and Clinical Medicine, L. S. P. Davidson, M.D., Professor of Medicine and Clinical Medicine, University of Edinburgh; J. W. McNee, M.D., Regius Professor of Practice of Medicine, University of Glasgow. Ed. 2. The Williams & Wilkins Company, Baltimore. 1942. Price, $8.50.

Very handy book; given over mainly to therapeutics; contains many good prescriptions and sound advice.

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From Witchcraft to Chemotherapy

By Sir Walter Langdon-Brown, Emeritus Professor of Physic and Fellow of Corpus Christi College in the University of Cambridge. The Linacre Lecture, 1941. Cambridge at the University Press. The Macmillan Company, New York. 1941. Price, 60 cents.

Most entertaining and informative as to the development of therapy, from religion and magic, witchcraft and fairies, folklore in the old testament, herbal remedies, to the evolution of modern means of treatment.

◆ ◆

The Prospective Mother: A Handbook for Women During Pregnancy

By J. Morris Slemons, M.D. Sometime Associate Professor of Obstetrics, Johns Hopkins University; Professor of Obstetrics and Gynecology, University of California and Yale University. With a chapter on Care of the Newborn by Phillip E. Rothman, M.D., Professor of Clinical Obstetrics, University of Southern California. Ed. 4. D. Appleton-Century Company, New York. 1942. Price, $2.50.

An outstanding and popular medical handbook for the laywoman written by eminent obstetricians. A complete guide for women during pregnancy, containing helpful advice and counsel and information on the latest advances in medical science.

Outline of Histology

By Margaret M. Hoskins, Ph.D., and Gerrit Bevelander, Ph.D., Department of Anatomy, College of Dentistry, New York University. The C. V. Mosby Company, St. Louis. 1942. Price, $2.50.

Set in double column, typewriter type, loose leaf plastic binding; 2 parts: Part I —general histology; part II—dental histology and embryology, blank pages for notes freely interspersed; beautifully and clearly illustrated; apparently gotten up for dental students but medical students will find the book very helpful because of its brevity, conciseness, clearness and the beautiful illustrations.

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First Aid and Bandaging

By Arthur D. Belilios, M.D., D.P.H. (Eng.) and Others. The Williams & Wilkins Company, Baltimore. 1942. Price, $1.75.

Since medical colleges are now organizing instruction for their students in first aid, this little volume will serve as a fine text. It is complete; well arranged with hundreds of good illustrations.

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Shock: Its Dynamics, Occurrence and Management

By Virgil H. Moon, M.D., Professor of Pathology, Jefferson Medical College. Lea & Febiger, Philadelphia, 1942. Price, $4.50.

A condensed, practical, treatise on the phenomena of shock. The first part of the work deals with the physiologic and pathologic features of shock, its various complications and its sequelae. The second part is confined to practical matters including prevention, early recognition, diagnosis and management. A special section sets forth the most recent developments in the preparation of blood substitutes and of their use in treatment. Short summaries conclude each chapter.

◆ ◆

Synopsis of Pathology

By W. A. D. Anderson, M.D., Assistant Professor of Pathology, St. Louis University School of Medicine. The C. V. Mosby Company, St. Louis. 1942. Price, $6.

Presents pathology in a compact and condensed form, designed for the medical student as well as the physician who must maintain familiarity with the foundation sciences of medical practice. References, carefully chosen, are given at the end of each chapter. Profusely and beautifully illustrated in black and white as well as in colors. A good student text meeting every need.

Diseases of Women

By Ten Teachers under the direction of Clifford White, M.D. Edited by Sir Comyns Berkeley, Clifford White and Frank Cook. Ed. 7. The Williams & Wilkins Company, Baltimore. 1942. Price, $6.

Fine, small book; adapted for student use; well illustrated; rearrangement of chapters and brought up-to-date.

◆ ◆

Professional Adjustments II

By Gene Harrison, R.N., Educational Director, Druid City Hospital School of Nursing, Tuscaloosa, Alabama. The C. V. Mosby Company, St. Louis. 1942. Price, $3.50.

Combining the inspirational and the ethical with the purely factual written in a most readable style by one who has had much experience with the training of nurses. There is an abundance of references.

◆ ◆

Textbook of Pathology

By Sir Robert Muir, M.D., Emeritus Professor of Pathology, University of Glasgow. Ed. 5. Williams & Wilkins Company, Baltimore. 1942. Price, $10.

Primarily a text for students, based on the course of instruction given by the author; well correlated with clinical medicine showing the bearing of structural changes on disturbances of function and incorporating the principal results of experimental and clinical research. The present edition brings the text up-to-date.

◆ ◆

After Effects of Brain Injuries in War: Their Evaluation and Treatment. The Application of Psychologic Methods in the Clinic

By Kurt Goldstein, M.D., Clinical Professor of Neurology, Tufts College Medical School. Foreword by D. Denny-Brown, M.D., Professor of Neurology, Harvard Medical School. Grune & Stratton, New York. 1942. Price, $4.

Dr. Kurt Goldstein, for more than ten years head of a hospital for soldiers with brain injuries and of an institution for the study of the sequelae of such lesions offers in this timely book the fruit of his extensive and almost unique experience. He had the rare opportunity not only to examine systematically about two thousand cases but to observe and treat many of them over an unusually long time. The best methods for the task of examining and treating soldiers with gun-shot wounds of the brain are outlined in this book in a detailed and very clear manner, generally applicable.

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